

HARVEY'S
VANITIES

1699

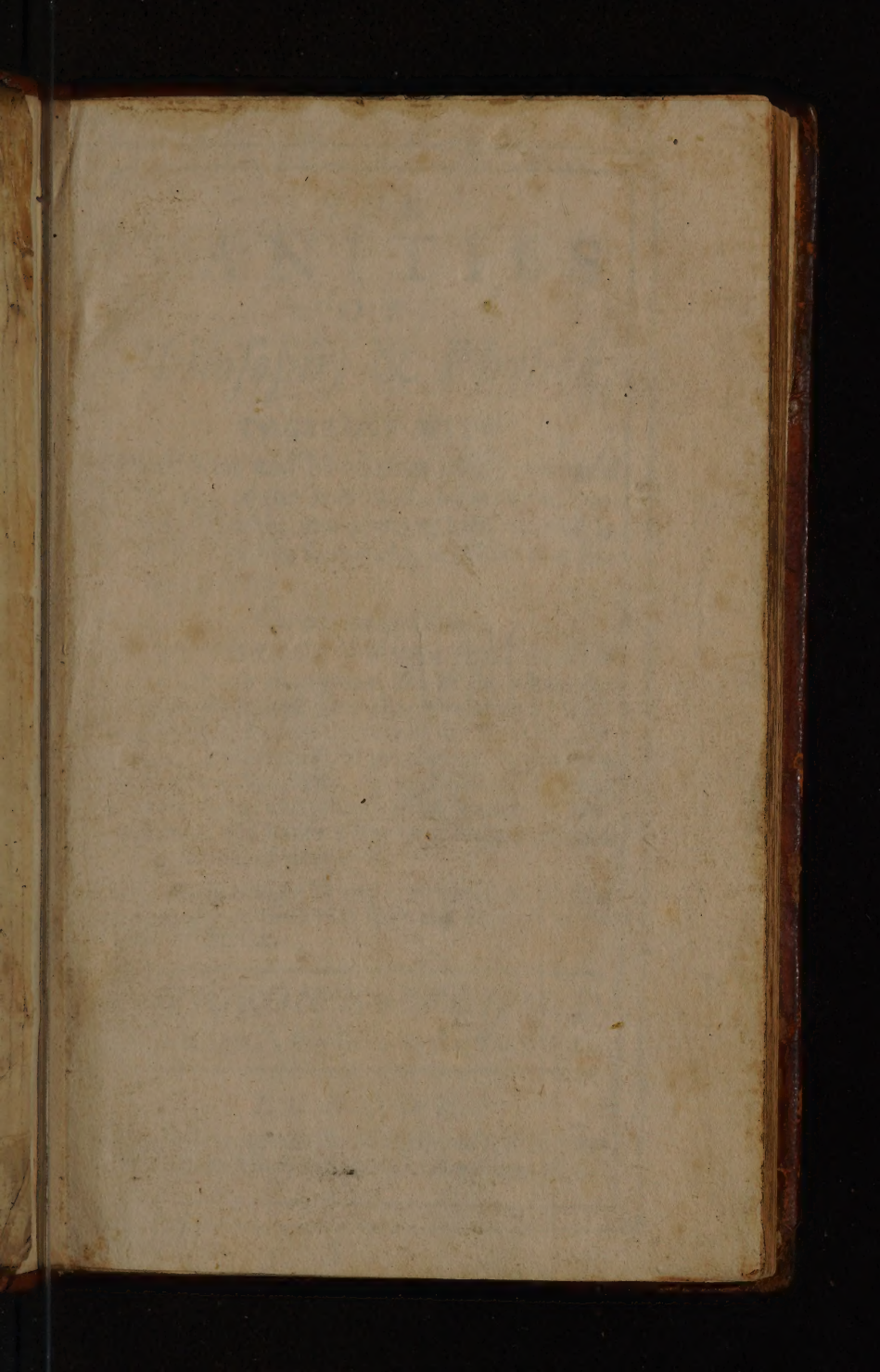






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THE
VANITIES
OF
Philosophy & Physick:

TOGETHER WITH

Directions and Medicines easily prepar'd
by any of the least Skill, whereby to pre-
serve Health, and prolong Life, as well in
those that live Regularly, as others that live
Irregularly.

Comprizing moreover

HYPOTHESES different from those of
the Schools throughout almost the whole Art
of Physick, and particularly relating to Indi-
gestion, and other Diseases of the Stomach, Fe-
vers, Consumption, Stone, Gravel, Suppression
of Urine, Apoplexy, Palsie, Madnes, Diseases
of the Eyes, and others: With Variety of Me-
dicines, and Rules whereby to make particular
Choice out of them.

The whole being a Work very useful to all, but
especially to those that have any Relation to the
Art of Physick.

By *GIDEON HARVEY*, M. D.
The KING's Physician to the *TOWER*.

L O N D O N,

Printed for *A. Roper* at the *Black Boy*, and *R. Bassett* over
against the *King's Head*, both in *Fleetstreet*, 1699.

THE VARIETIES OF PHILOSOPHY & PHYSICS



Directions and Medicines
by any of the least Skill, who
serve Health, and prolong
those that live Regularly, as others
Irregularly.

Completing the work

HYPOCRITES different from those
the School throughout almost the whole
of Physics, and particularly relating to
gout, and other Diseases of the stomach,
yeas, Constipation, Stone, Gravel, Suppression
of Urine, Apoplexy, Palsy, Madness, &c.
of the Eyes, and others. With Variety of
Medicines, and Rules whereby to make the
Choice out of them.

The whole being a Work very useful to all, but
particularly to those that have any Relation to the
Practice of Physick.

GIDEON HARVEY M.D.
Physician to the Tower

LONDON
Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard.

THE INTRODUCTION.

Here is no stout Dedication to any Illustrissimo for a Protector, who beyond all peradventure knows nothing at all of the matter; and tho' you should flatter him with all the hyperbole's of his Family or Ancestors, and of his great Endowments and heroick Virtues, yet he would think himself not paid in full, for lending of his Name to adorn your Frontispiece. The motive of publishing this Tract, is not the intercession of Friends; for none of 'em ever had the view of any part of it. Neither would I be so unfortunate to please many of the Faculty; for that must infallibly draw upon me the Envy and Hatred of Ten times the number, besides Calumnies and Reflections. The chief inducement proceeds from an inclination to Mankind, to instruct them, to preserve and prolong their Lives; thereby to prevent them from using fraudulent Quack Medicines, (which are now become so Universally vendible among them) or advising with such as are wholly Ignorant, and consequently very bold. I do in no wise pretend in these following Sheets, to make a Lecture to the Learned; tho' I should think my self sufficiently rewarded for my pains, if I could arrive to the point of advancing the Art of Physick, by offering to them my Observations on the pretended and fallacious Methodus medendi, depending upon false Indications (received for true) abstracted from Diseases and their Causes, and by proposing the trials I have made of the best and most celebrated Remedies, which upon diligent inquiry in my thoughts I could not find to have contributed any thing towards the curing of Diseases, and tho' re-
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moved upon the use of 'em, I am certain ought to be ascribed only to time and strenght of Nature, and to be term'd Curing Diseases by Expectation. Besides, I hope by making so great a number of Doubts, and moving as many Difficulties, to have done some Service to the Art, in giving learned Men the occasion to remove them, and to take seriously into their consideration, whether all, or most part, and indeed any part of what the Ancients have transmitted to us concerning Diseases, and their pretended Remedies recited in their Books, and by others afterwards compiled into Dispensatories, ought to be received by us with an implicate Faith, so as to doubt less of the truth of them, than of those fine Histories of an Alexander, or a Cæsar.

After all, I must tell you, a Self-interest prevail'd very much with me in the printing of this, which is, that writing an ill hand, and being puzzled sometimes to read it, and the Matter not digested into any sort of order, I might have a more easie recourse to my own Thoughts and Sentiments, being expressed in Characters more legible, and so disposed, that I could then more readily turn to them.

I do also think my self obliged to take notice, that in the following Discourse I have very much receded from those Opinions written by me in former Treatises, whereinto the almost universally received Doctrines of Authors, and my neglect of examining of them rationally and experimentally, had led me, as you may more particularly observe hereafter, for all which Terence in *Adelphis*, Act. v. Sc. iv. seems to make a sufficient Apology, viz.

(fuit,
Nunquam ita quisquam bene subducta ratione ad vitam
Quin res, ætas, usus semper aliquid apporet novi.
Aliquid moneat: Ut illa, quæ te scire credas, nescias,
Es, quæ tibi putaris prima, in experiundo ut repudies.

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The Introduction.

The Sense in English is; That no Man ever made so exact a Calculation of matters in his life time, but either the occasion of things, or length of Tears, or Experience, doth offer something that's new; and gives you to understand, that what you thought you knew very well, you do not know at all; and causes you by making trials to reject that, which before you did most approve of. This I must own to have found true in my self, and particularly in reference to continual putrid Fevers, which are most common in France, and malignant Fevers most frequent in England, very few of the former being observed here. I did as near I could imitate the generality of Practisers in curing of them; I advised Bleeding as frequently as others, tho' nothing near so frequently as now they do, which is a far greater Error in malignant Fevers (as most of ours are) than in those, commonly call'd Continual Putrid Fevers; not forgetting cooling Apozems and Juleps, that allay the heat, and abate Thirst; sweating Juleps and Powders to drive out the Heat, that is, those nitrosulphureous and bituminous Particles that might occasion that heat, as I then thought, and not neglecting Glistering and Blistering; for I did observe, that whoever died without the application of Spanish Flies, the Vulgar did most certainly impute the Cause of that Man's death to the ignorance or neglect of the Physician, in not applying of the Tormentors. Upon the calculation of the whole matter (as Terence saith) I found by length of years, that cæteris paribus, as many as were not physically treated, recovered, and in some Seasons many more recovered than those that had been oft Blooded, Cordial'd and Sweated, Glyster'd and Blister'd: Which wrought this Opinion in me, that all the Hypotheses of Fevers, whether seemingly true

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or false, were of no manner of service, to ground the practical part upon; for even now do what you can, the Fever walks on from the Beginning through the Augment to the State, and if the Patient hath not been over-blooded, or preposterously purged, he may pass through the Declination to a condition of health. This being seriously observed by me, put me upon forming a different Hypothesis, and Indications conformable to it, whereunto the Indicata, or Remedies responding do evidently and sensibly abate the Cause and Symptoms, without suffering the Fever to run up to a state. I have had very lately occasion to make observation upon a sort of malign Fever, that was popular about us. They were generally taken with Coughs, Drowsiness, moveable Joint-pains, commonly termed Rheumatic Pains; some did spit Blood, and afterwards Matter; they were for the greatest part free from Drought, their Urin of a good colour with a whitish Sediment, the Pulse slower than usually in the state of health. They generally said they ayled nothing, they were not sick, but they had gotten a great Cold, tho' they were suddenly reduced to the greatest weakness. Those that upon their own heads, were blooded after the fourth day, or were Blooded more than once, died. Others that were blooded sparingly once within the two first days, sensibly recovered upon the using of an uncommon Antifebril Medicine. Another Mistake I have oft taken notice of importing, that what is expectorated by Patients properly Consumptive, by reason of an Ulcer in the Wind-pipe, or the Bronchia (for it is not frequently observed to be in the Lungs) attended with an Hectick Fever, is all pus, or a materia purulenta, which is not possible; for should all that thick glary greenness, yellowish, and sometimes whitish matter be pus, that's

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that's expectorated by such, which I have seen bath exceeded the measure of a quart, and more, in four and twenty hours; it would exceed the quantity of forty or fifty very large external Ulcers, though scituated near great Vessels; so that I conceive there is only some purulent matter mixt with a slyme corrupted, and putrefied to an extremity, and therefore that commonly is not only attended with a stink, but all their breathing out of their Lungs, and Pores of the ambient Skin, stinks, as doth also their Victuals, if by chance they happen to vomit them up. Wherefore I do apprehend, that all the Humors, in their Vessels are corrupted and stink, and that all their Bowels are tainted: So that the French have no other word to denominate a Consumptive, than Pourie, which signifies rotten: Were it only an Ulcer, the Difficulty would not be very extraordinary, that being easily cur'd; for we see daily, that the Ulcers occasion'd by a Pleurisie, and a Peripneumonia, are oft cured very speedily of themselves, without administering any Medicines. To pretend to cure a Confirm'd Consumptive, is equal to make a new Man, new Bowels, and new Humours: It is in the beginning only this Disease admits of a Cure, and which must be perform'd with Remedies very uncommon.

Before I leave this Subject, I ought to obviate a very considerable Objection, viz. A Stinking Breath, which some are affected with during the whole Course of their Lives, to a degree, that they are capable to perfume a whole Room, is commonly supposed to proceed from putresc'd or rotted Lungs, notwithstanding is seldom or never attended with an Heetick Fever; and as incurable as it is, is not accompany'd with a rotten Cough, nor doth it taint the Bowels, nor infect the whole Mass with Putrefaction; and therefore an Ul-

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cer in the Lungs, Aspera Arteria, and Bronchia, cannot import that Danger, nor infect the Bowels and Humours with a Stink and Putrefaction, as the fore-going Discourse seems to insinuate. This Difficulty is easily remov'd: That sort of Stinking Breath, which is here instanc'd, doth not proceed from the least Putrefaction of the Lungs; for very oft those Persons so affected have very sound Lungs, breathe well and free, live to a great Age, and digest their *Viduals* very well; which is a sign also that neither the Stomach can be suspected to steem up such a lasting ungrateful Fume, tho' it must be granted, that a stinking Breath may for a time be occasion'd by Steams, arising from a foul Slyme in the Stomach, corrupting there, and relaxing the upper Orifice so, as it doth not close so exactly as it ought: But this is soon cured, by clearing the Stomach by a Vomit, or Purge. You are therefore to apprehend, that the Cause of a perennial Stinking Breath in these healthful Persons, is to be imputed to Slyme issuing daily and hourly out of the Glanduls of the Throat, and harbour'd in some deep small hollownes or crevice near the Tonsils, and sometimes on the back-side of the Uvula, either towards the Right or Left Tonsil, where being kept long, and constantly meeting there with a putrid Slyme that was left there before, doth corrupt and putrefie the Slyme that useth thither every Moment: The Breath of the Lungs passing by, carrieth these putrid Steams with it, and so causeth that Stinking Breath, which is but very little amended by sweet perfum'd Loxenges, chewing of Orange-peel, Spices, or Sweet Confects. The only Palliative Remedy is, to use a strong absterfive penetrating Gargarism four or five times in a Day, especially in the Morning soon after rising, and at other times after eating and drinking, made of a good quantity of Wormwood-topps, Century-flowers, Orange-peel and Juniper-berries, boil'd in Vinegar, or White-wine, sharpen'd with Spirit of Sulphur. This, by piercing into that Crevice, or Hollownes, and wiping off the putrid Slyme, removes the Cause, and renders the Breath very tolerable for a considerable Interval, and by chance may in time wholly cure it, tho' commonly it is incurable.

To conclude; I do wist, that what I have publish'd in these following Papers may be as serviceable to others, as I do conceive (if I am not under a Mistake), they are, and have been to me.

THE

THE
VANITIES
OF

Philosophy and Physick.

CHAP. I.

*Representing some Vanities of common
Receipts, Herbs and Herbals.*

I. **T**HO' all Nations are imbued with various Specifick Qualifications, wherein each differ from the other, yet that of Credulity, or an easie rash and inconsiderate belief may be conceived, to be universal to Mankind, and to which not improbably ought to be imputed the sequel of the most frequent and greatest Errors, Deceits, and Impostures, most Men are daily and hourly plunged in, as the source and spring of all, as may be plainly Evidenced in each of the three subsequent Faculties, I mean Divinity, Law, and Physick. The Popish, Mahometan,

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Sun, Moon, and Devil Worshipping Religions, embraced by such innumerable Multitudes, also all Heresies, Schisms, pretended Witchcrafts, Sorceries, and Exorcisms, howsoever erroneous, impoling, and deceitful these all may be censured, flow from no other head or fountain, than an easy inconsiderate belief given to the insinuations of cunning subtil little Priests; And he that gives a precipitant credit to the Language of a Seller of Lands, Houses, or other Merchandizes, doth not rarely repent his rash belief, especially when he adds to his Error, his too easie acceptance of relief, from the doubtful remedies of a vulgar Lawyer: But it is the third Tōpick beforementioned, is design'd for the chief subject of the present Discourse, which I shall endeavour to explain in its extent.

2. That most of Men do very readily take upon trust any Remedy, or receipt, that is confidently recommended to them, can scarce be contradicted; and their fond passion in the inconsiderate belief of 'em is so great, that without any loss of time, they are to be Registred in their Book of Receipts, handed to them possibly by their Grannam, and *Archive* like to be lock'd up in their Desk, secured in a lock'd Closet, within a lock'd Room. Three such Locks being broke open by a Notorious Thief, Stole thence a Hundred Pounds in Moneys numbered, and a Book of manuscript Receipts finely covered. The party injured condoled the loss of his Remedy-Manuscript to such a degree, that it wholly drown-
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nied the loss of his Money-bag, which he would readily have compounded for the restoring of the Book, which the blank paper in it excepted, would have been overvalued at Two-Pence.

3. The next recital coming within my knowledge, will give you a farther taste of this sort of foolish Credulity. The Servant of a Linnen-Draper had so great an Interest in her Mistress, as to borrow out of her Husband's Closet a Book of scribbled Receipts, which through a Communicative kindness to one of my Maid-Servants, was entrusted with her to be Transcribed; but the Master daily conversing in his Closet, soon missed what he so frequently eyed, and valued above all what was in it; upon a strict enquiry after the matter, his Wife as soon qualified his uneasiness, by acquainting him where this valuable Treatise was to be found, who not long after accosted my Maid several days, being delayed for want of an opportunity of Transcribing. The person being tired by unsatisfactory answers, resolved to disclose to me the cause of his so frequent Conferences with this Menial of mine; and promising to use my Authority with her, I did not doubt, but I should oblige him with the return of his Book next Morning at a certain Hour, at which time precisely he came, when I did not fail to discharge my promise, in repossessing him with his Book, which he received from me with all the respectful Reverence, that Hands and Knees could express. You will not judge

it improbable, that my Curiosity should lead me to inspect these Papers, which to the best of my Memory contain'd an excellent way to Stew a Calves-Head with Oysters, another to make Fritters, and some other pieces of Cookery; also a Salve for Chilblains, a Plaister for all sort of Swellings, an infallible Drink for the Stone, a most certain Remedy against a Consumption, and all sorts of Coughs of the Lungs, being a Syrup jumbled of most strange Materials. Varieties of other Infallibilities of Remedies equally foolish I pass by, and shall only remark the immensity of this Man's belief, by his Mournful Countenance, whilst his Book of Secrets was absent from him, and to what serenity he was restored upon his reinstatement.

4. Suppose one of these Medicines were to be taken out of this Magazine of Health, and to be applied against a Consumption, Stone, or any thing else, the failure he would most certainly attribute to the want of some of the Ingredients, their too long being gathered, too much or too little being boyled, or to a hundred other Miscarriages, inso-much, that it would not give the least shock to the stability of his belief, which might not be singular in this person, but general in thousands.

5. It would by many be Censured an Usury in a person, that from the Expence of thirty or forty Shillings, in the purchase of a Gerard's Herbal, or such like picture Book, he should expect such an excessive Interest for

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his Money, as the value of knowing the faces and vertues of so many hundreds, or rather thousands of Plants doth amount to: And indeed the Bargain of that Plant-Book would prove extraordinary Cheap, did what is contain'd in the hundredth part of it, answer to Truth in matter of Fact, which gives me occasion to make this Inference; that Herbals are fitter for Gardiners than Physicians, in furnishing the former with a Scheme of Figures of so many thousand Weeds there described, and consequently to throw them out of their Manures, as Absorbers of the juice of the Earth, that should give Nourishment to their Esculents. However, to prevent contradicting the Old Phrase, *Natura nihil facit frustra*, it may not untruly be affirmed, that the generality of Herbs growing in Fields, Meadows, and Hills, Nature seemed chiefly design'd to bestow upon Beasts. It would therefore be an Employment fitter for Boys, that love Rambling and santring about Fields, and Hedges, to go upon Simpling, (as our Botanists do term it,) than for Men, to make such needless, and not unchargeable Journeys, to the remotest Hills, and Woods, only to be acquainted with some New faces of Plants, and take the Portrait of 'em, to be placed together in some bulky Volume, whose immensurable industry doth no more than equal those, that have taken the pains to abstract the Pictures of variety of Beasts, Fishes, Birds, Flies, and other Insects, in the manner of *Aldrovandus* and his Mimicks, who in

that sort have passed their Lives in doing of nothing.

6. What respect is paid to *Hippocrates* and *Galen*, for their Services in Medicine, and to *Geber* or *Paracelsus* in Chimistry, *Dioscorides* may Challenge in *Herbary*, he being by Profession an Old Soldier, and worn out by the Fatigues of Campaigns, with the assistance of his Crutches and Stumps made a shift to Perambulate Woods, Hills, and Dales, in pursuit of Herbs and Weeds, with a design to get his Bread, by Experimental Application in the Cure of Diseases, wherein he attained the success of *Gypsies*, that by foretelling the ignorant their good or bad luck, sometimes hit, and sometimes missed. Their casual hitting gives them Reputation enough, to perswade people, that their missing is occasioned by their misunderstanding the *South-Sayer's* Predictions, or their own forgetfulness of what was told them, so that many do readily believe these *Gypsies* to be never failing Prognosticators, not unlike *Dioscorides* his Herbal performances, who by his green Remedies observing some Diseases disappearing, made no doubt of ascribing their Cure to 'em, and as boldly to hand the *Probatums* to succeeding Ages, which as confidently without the least scruple, even to this day do receive them, not thinking that length of time, change and sparseness of Dyer, alteration of the Air and Season, universal and particular evacuations might perform the main part; the Truth of which seems by many instances to appear to

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me. That *Betony, Rosemary, Sage, Lavender, Mother of Tyme, French Lavender, Piony, May-Lilly, Lime-Tree-Flowers*, and the like, upon the use of 'em, by direction of the Learned, for many Days, Weeks, and Months, have failed in the Cure of Head-Aches, Tremblings, Swimmings of the Brain, Convulsions, and other Distempers of the Head, can best be attested by the Advisers; though it cannot be denied, that some of these Diseases have gone off in very few, upon the application of the foresaid Vegetables; but whether to be imputed to the vertue of these, may be matter of inquiry: However, hit once and miss a hundred times, is a sign of no great infallibility.

7. That a Million of Consumptives labouring of an ulcerous Disposition of the Lungs, have been frustrated by a very long use of *Ground-Ivy, Maiden-Hair, Ysop, Scabious, Lung-wort, Coltsfoot, Sanicle, Golden-Rod, Ladies-Mantle, Bugle*, and forty more, though used in all the forms and shapes, is sufficiently recorded in most of the Church-yards of this Island.

8. The Stone-grinding and Piss-driving-Herbs, as *Saxifrage, Maiden-Hair, Speedwell, Horse-Radish, Fennil, Persly, Broom, Gromwell, Daucus, Butchers-Broom, Cicers, Winter-Cherries*, and the rest, are not much depended upon by those, that have made trial of 'em for four or five Months successively, though now and then, one or other, that hath fancied a great relief, doth revive their dying Reputation. These and the

like instances do aptly compare the practice of Physick to a Lottery, where one Fortunate Adventurer saves the sinking credit of that Cheating Mystery, against a hundred blank Miscreants, by being proclaimed such by sound of Trumpet.

9. To *Madder*, and many other Vegetables is ascribed Opening, Stopping, Binding, curing of the Jaundice, removing Obstructions of all sorts, suppressing the *Menstrua*, Loosenesses, and all sorts of Bleedings, besides many other feats, that are contrary to each other. As for *Amulets* and other Transplanting and wonderful deeds, they are appropriated to abundance of Plants, of which, and several Physick Golden Legends the Herbarists speak wonders, if you can believe them. As for my own particular, beyond forty or fifty Vegetables, tho' I have made trial of hundreds of 'em, I find no great occasion for them, and therefore shall supersede taking any farther notice in this place.

CHAP. II.

Of the insignificancy of the Old and New Philosophy.

1. **T**Hings in Philosophy and Medicine, which we do not know, are beyond all manner of Comparison more than those things we do know.

2. The greatest part of those things in Medicine, which we pretend to know, is conjectural, and uncertain.

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3. *Many, if not moſt of theſe things, which we do peremptorily affirm to be this, or that, to be cauſed by this, or that, or to cauſe and effect this or that, are, or may be proved, to be falſe, or erroneous.*

Theſe Poſitions being only my particular Creed, whereinto the weakneſs of my capacity hath been wrought by thouſands of inſtances, I ſhall undertake to offer only ſome few, the ſhortneſs of my purpoſe no otherwiſe permitting.

1. Natural Philoſophy is propounded under Two Heads, *viz. Phyſica generalis, & ſpecialis*; that is to ſay, *General Natural Philoſophy*, and *particular*. The former expounds in general terms, what a Natural Body is, namely, That it is a thing extended, moved, or quiet, figured, and ſo or ſo placed, ſcituated, or poſited. *Corpus Naturale eſt res quanta, mota, vel quieta, figurata, & taliter, vel taliter poſita.*

2. What is all this but *Metaphyſicks*, namely, general Notions drawn from all particular Bodies? A Natural Body doth conſiſt of Quantity, that is, extension into length, breadth, and depth, menſurability, or diviſibility into Particles, (it's much as one in the Original,) of motion, or reſt, of figure, and poſition or ſcituatio. Upon theſe five Topicks follows a very long Cant, and of little more ſignification than the Predicaments, or *Materia, Forma, and Privatio*. But it's a wonder to my crude Thoughts, Number was left out, ſince there is no compleat Natural Body, but doth conſiſt of a definite number of Particles; however

ever it may be presumed, that Number is comprehended under Extension, sc. *Quantitas discreta*.

3. The *Physica Specialis* depends upon the application of the forementioned, to every *Subgenus*, *Species*, and particular Body, and by that you are to know, what any particular Body is, of what it doth consist, and how each is differenced from the other.

4. What found this modern Science of Bodies makes upon an anvil, the following recital will inform you. A *Smith* being very sedulous in the management of his hot Iron, found himself much interrupted by the importunities of a begging Scholar, inforcing his Argument for an Alms of a small piece, with an Harangue of his Merits, arising from his being a *Master of Arts*, of I know not how many years standing, a *Doctor in Philosophy*, embroider'd with *Latin*, *Greek*, *Hebrew*, and abundance of other Giblets of Learning. The *Smith* to free himself of all this impertinence, asks, what that red hot thing was, he held in his Tongues, what it was made of, and what difference there was between that and Copper; to which the Beggar replied, it was Iron, a Mettal, or a Business dug out of the Ground, that will melt, and can be hammer'd; and so is Copper, infers the *Smith*; *Ergo*, Copper is Iron. No Master, saith the Medicant, there is a vast discrepancy between them in their insensible particles, which are of different insensible extensions, insensible figures, insensible positions, insensible motions, and insensible

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ble immobilities. *Ergo*, then ſaith the black
opponent, no two Bodies can be alike, two drops
of Milk, of Water, of Wine, or any liquid
may be inſenſibly different. Thou art a moſt
inſenſible Philoſopher, a Man is not a Horſe,
a Sow is not an Elephant, Wood is not Cheeſe,
and ſo of all others, becauſe their Particles are
of various inſenſible figures, poſitions, &c.
The moſt ſubtil Particles of the Forge fire,
and the inſenſibilities of this *Arts Maſter*, had
by this time fermented *Vulcan* into a torrent of
Maledictions, crying out, you are a Cheat,
to defraud the impotent poor of what, they
may juſtly crave from the Charity of all Men;
a lazy, ſlothful, unthankful Knave, enjoying
the fruits of thy laborious Mother Earth, with-
out returning the gratitude of a days Plowing,
or Dunging, which you are made for; an in-
corrigible ſturdy Beggar; ſee how the ſleeves
of your totterdemalion Gown are cram'd
from the Elbow to the Ground with Pie-cruſt,
and pieces of Roaſt-Beef, and what's here in
the bottom? a couple of Silver Spoons, two
laced Hankerchiefs wet, as if newly ſtolen off
of ſome Hedge. You pilfering Dog, diſrobe
that Friar *Bacon's* Livery, off with your ſquare
pancake Bonnet, and put on that Old Coat of
mine there, and this Old Hat; blow the Bel-
lows, and I will teach you an Art beyond all
your Maſterſhips idle foppish Arts, and Scien-
ces, that ſhall get you an honeſt Livelihood,
or elſe away to the Houſe of Correction, that
will ſoon drive out your inſenſible Particles,
and make you ſenſible of what it is to Beg,
Cheat, Pilfer, and Steal.

5. To

5. To what degree of satisfaction this Globular sort of Philosophy, pretending by its insensibilities to explicate the principles, causes, and affections of natural Bodies, doth supererate the old pedantick Sophistry of matter, form, privation, and the four Elements, together with their assigning the effects of natural Bodies to occult qualities, may justly be inquired into, since the answer is equal, that such or such things are caused by occult qualities, or by insensible Particles, of insensible blind figures, and unknown positions. However, both the Globular and Peripatetick Philosophy afford matter sufficient to Chatter, Cavil, and trifle away the flower of a Man's time, as if design'd only for an Employment to divert from Idleness and Debauchery, not unlike sending Children to School, to prevent them from Carts and Coaches in the Streets or High-ways. Those do properly enough come within the saying of *Salust. Vitam silentior veluti pecora transeunt*; especially when continuing in an University, and possibly in a Fellowship, till their Bodies are grown rusty with Sloth and Laziness, and their Heads turn'd mouldy with grey Hairs, whose Studies indeed ought to have been determined in seven Years, were it only to quicken their Industry, and make way for other indigent Students to succeed them. A Peacock in all his gawdy Plumage is a Creature less stately and proud, than a Master of Arts treading to the Schools in his Formalities; and though Homage be paid him in his way thither by Undergradu-

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ates, and *Bacheleros*, his refined Manners will scarce allow his Mastership to touch the angle of his Bonnet. *Clarissime Magister quare rides? Rideo, quia Magister sum.*

CHAP. III.

Of the Digestion and Indigestion in the Stomach, and the vanity of the cause thereof.

IT might be reasonably expected from the Tradition of so many Ages, and the Studies of six or twelve Months of so many *Ma-*
sters of Arts of seven Years standing or walking, before they assume the tufted Gown, that *Galen's* Theory would be render'd as *Diaphanous*, and demonstrable as *Euclid*; yet to my dimme Oculat^{ion}, Many, if not most of their Notions, seem still to be plunged in a dark *Chaos*; for as obvious as the Digestion of the Food in the Stomach may be, though it be the first Operation in the Body of Man, and therefore ought to be better understood, yet to me seems now, nothing can be worse explained, than by asserting the dissolution into Chyle, to be performed by the natural and adventitious heat of the Stomach, brought to it by the Arteries and warm coverings of the Liver, Spleen, and other adjacents. A *Sharc*, *Sea-Wolf*, and other Fish, if Credit may be given to all those Writers of *India Voyages* have been found to contain in their Bellies a whole
Man,

Man, being thrown overboard, with all his Cloaths upon him, great Joynts of stinking Beef, with their huge Ox Bones in them, and Carcasses of Sheep with their Wool on their Backs, all which were discerned almost digested into a thick slimy Juice, without observing any sensible heat, but rather coldness. The like may in proportion be instanced in a fresh-water *Sharo*, I mean the *Pike*, whose vigour in digesting an Ox paunch, and other Garbage, likewise Boney Fish of considerable bigness, without any sensible heat in their Bowels, or any steaming warmth, is an Argument, that inforceth the former. The heat in the Maws of *Poultrey*, which is inferiour to that of the Stomach of a Man, cannot be conceived in any wise proportionable, to dissolve the husks of *Barley* or *Oats*, and especially small pebbles, which the extremity of Fire may melt; but not dissolve, and yet the heat of the Stomach of a Horse, though much more intense, doth make much less impression upon Grain, which commonly slip away untouch'd with their Dung. It hath likewise been decided by common observation, that those who heat their Stomach at Meals with Wine, or soon after with Brandy, have a more difficult Digestion than others, who moisten their Victuals with small Beer, Wine diluted with Water, or only Water, as is usual to three fourths of the Universe.

2. Neither am I convinced, that those who ascribe the Energy of Concoction to an Acid Ferment, have in any wise hit their Mark;
for

for considering fermentation imports properly an insensible, and in some things a sensible small ebullition or simpering of any natural, or artificial, mixt, or compound liquid, soft, or consistent Body, which by rarefaction, or widening and opening the close parts, doth let out, or expel such particles, or bodies, that are Heterogeneous, whereby a depuration of the said mixt body is attained: And if this rarefaction, or widening, and multiplying of the pores of the Body, be protracted to too long a continuance, or performed with too great violence, the most subtil particles of that body, which are the chief constituents of it, are forced, or let out together with the Heterogeneous, whereupon a dissolution, putrefaction and corruption of the whole mixture must necessarily ensue, as appears in the fermentation of Wine, Beer, Cider, &c. which being rais'd too high, or continued too long, doth most certainly convert them into Vineger. Dow, by yist or levain, is hufft up (or in the common phrase doth rise) or rarefied, that is, opened, or widened in all its pores, and oft multiplied, whereby the most subtil particles, or matter of the fire (being the heat of the Oven) is let in, which together with the constituent most subtil particles of the Dow, do expel the nitrous, and other heterogeneous slymy parts, which otherwise would prove very offensive to the Stomach, and in some be render'd indigestible. Now if the Dow continue too long in rising, or rise too fast, it soon falls, and is apt to turn sower, and
being

ing then put into the Oven, can never be well baked; and doth in a short time turn mouldy.

3. To say then, that Bones, Grissels, or any other hard matter, is rarefying in a Dog's stomach, meaning thereby fermenting, and consequently digesting, to me seems a very improper way of speaking; for fermentation doth in my Opinion ever follow Solution, in order to depurate and render homogeneous, what is dissolved; how then can those Bones be said to be fermenting before they are dissolved and digested?

4. It is to the Spittle many Physicians of good Fame do attribute the chief, or rather sole power of dissolving the Victuals into Chyle, by raising a Fermentation in the Meat and Drink, that's swallowed down into the Stomach; for being chewed, crush'd, rowl'd, and turn'd about in the Mouth, it's mixed with such a proportion of Spittle, which by its Spirits and salive Particles, assisted somewhat by the native and ambient heat of the Stomach, penetrating through the pores of the Victuals, raises a sort of a small Ebullition, whereby they are dissolved. But if you consider the nature and use of Spittle, probably this matter may appear otherwise. Spittle cannot properly be called an Excrement, which is of no use, and ought to be thrown out and expelled; but a Recrement, which is of use and ought not to be expelled, unless it be abounding, and after it hath performed what its intended for. *Horses, Cows, and other*
Animals

Animals have their Mouths and Throat always moistned with Spittle, but which is seldom or never expelled by them by sputation, as very oft it is by the Humane kind, when irs become superfluous; which is an Argument, its no Excrement. The use of it to me appears, to moisten the several parts of the Mouth, Gullet, and Windpipe, and to keep them constantly glib, smooth, and soft; for otherwise the Tongue and Jaws by their frequent motion, and the steems that continually pass out of the Lungs in the expiration, would render those parts so dry, stiff, rough, and unpliant, that they would become useless. The Windpipe would be so corrugated and contracted, that it would put a stop to the respiration; the Gullet would likewise through want of Spittle suffer such a streightning and roughness, that it would be utterly incapable to give passage to the Viſtals. Touching the nature of Spittle, it is in no wise different from *Lympha*, which is contained in other *Lymphæ-ducts*, the *Ductus Salivales* being no other, and as long as it continues in the said *Ductus*, its much fuller of volatile saline Spirits, which renders it limpid, fluid, and thin; but being come to the Mouth and the other parts, out of the said *Ductus*, those volatile saline Spirits do soon evaporate, and fly away, whereby the Spittle becomes thick, mucilaginous, and oft frothy, by the admixture of extraneous Air, and other slimy Particles, it meets about the Mouth and Throat. So that if Spittle be of this nature, it must rather hin-

C

der fermentation, and consequently the pretended solution into Chyle, which that it doth, is manifest in those Melancholians, that are commonly termed Spitters; who generally have a very bad Digestion. But suppose a Man that abounds with Spittle, should spit a quantity of it warm out of his Mouth into a warm bolt head hermetically closed, containing a small bit of Meat, that had been well grinded in a warm Mortar, and then this mixture being put into a warm sand Bath, do you believe, here would happen either a fermentation, ebullition, or solution into Chyle, though it were to continue there six Weeks? Or, suppose a Man should swallow several great lumps of Flesh without chawing of it, or mixing it with his Spittle, do you not think, he would digest it into a Chyle, though it might take up some longer time, than if his Meat was chawed? What Spittle doth a *Sharc* or *Pike* mix with those great pieces of Flesh and Bones, which they swallow without chawing, and yet digest them sooner, than any other Creature could, as they are in the Water?

4. That the *Lympha* in all the *Lymphæ-ducts*, (and the Spittle also though more sparingly) is perfused with some remaining proportion of volatile saline (that is Animal) Spirits, appears to me by the similitude of Argument, for establishing the circulation of the Blood out of the Arteries into the Veins, and thence into the Arteries again. The chief motive to me being, that the Heart throwing at every
Pulsation

Pulsation such proportions of Blood into the Arteries, these must of necessity swell to an extremity and burst; were there not other Vessels, namely, the Veins, ready to receive and unload the Arteries; as for the swelling of the Arteries on the side towards the Trunc, and of the Veins towards the extremities of the Body, upon a Ligature made on any of the Joynts; or the Arterial Blood upon Arteriotomy flowing from the Trunc, and the Venal Blood upon Phlebotomy flowing towards the Trunc, would scarce be persuasive enough to me to receive that Doctrine, since other Reasons might be given for those different Intumescencies upon a Ligature, or the different issuing out of the Blood out of the Arteries and Veins. In like manner I do suppose, that the *Nervous Lympha*, which is the Vehicle, and containing Liquor of the Animal Spirits, is always flowing or dripping from the Brain, and *Medulla Spinalis* to most parts of the Body through the Nerves; and cannot be supposed to return back again naturally, which therefore must of necessity extremely swell, and stiffen the Nerves, unless received and disburden'd by some other Vessels, which in all probability must be *Lymphae-ducts*; containing in substance, tenuity, clearness, penetrative vertue, and other qualities, a *Lympha* not unlike the gleet, that distills from a wounded nerve. Moreover, considering the valves in the said *Lymphae-ducts*, opening towards the Trunc, and shutting towards the extremities, doth add to the apparency of the

forementioned supposition, implying there is a circulation of the Animal Spirits and *Lympha*. The foresaid *Lympha* being received by the *Lymphæ-ducts*, must necessarily be much impoverish'd in its volatile saline Spirits, and consequently have lost its power of appor-ting of motion and sense, though otherwise of very great use.

5. Neither can I conceive, that the Stomach is capable to contain any Acid juice powerful enough to dissolve Bones, Grissels, Sinews, Skin, and all sorts of Flesh without hurt, and danger of perforating its membranes, being much softer and easier to be dissolved, than Bones or Sinews. If you pour the strongest Vineger, or *Aqua fortis*, upon those edibles beforementioned, and set them over any degree of Fire in a Vessel, stop'd as close as if Hermetically Sealed, for the space of ten or twelve Hours, you will scarce find any Solution, or at least not comparable, to what a sound Stomach performs in two or three Hours. Moreover, where any person by sower Belches perceives his Stomach to be charged with a sower juice, his Victuals will scarce be digested, or dissolved into a good Chyle, but into that sort of slime, which Physicians term *Cruditæ acida*. And I have frequently observed, that many upon Drinking sower Beer, or eager Wines, or using sower Sauces to their Victuals, have not only undergone a very laborious and painful digestion, but oft-times been forced to throw up their whole Cargo.

6. That

6. The Stomach doth sometimes receive such sorts of aliment, as Pudding, Pancake, Custard, Tansie, Minced-Pie, Plum-Broath, Plum-Cakes, and the like, which in most persons will ferment, and be rarefied to a degree, that will huff up, distend, and swell not only the region of the Stomach and Hypochonders, but also their whole Belly, to an extension and uneasiness, that will oblige them to unbutton, and widen their wasteband. Those recited, and the like edibles, containing a fermentative spirit in them, seldom fail in fermenting, during which, as it suspends, or at least retards the Concoction, (notwithstanding they seem matters so easily digestible, and incomparatively less difficult than Beef, Pork, &c.) yet the solution cannot, or is seldom perform'd with vigour, until the fore-said fermentation ceases, which is perceived by the subsiding and relaxing of their drum bellies. Hence it is, that many do find, they cannot digest so easily upon drinking bitter or sower Small-beer, or strong Ale, Beer, or Wine, as a small alish smooth Beer, Water, or Wine and Water, because the former contain such a large proportion of fermentative spirits. And it is upon the same consideration, that new Drink not being sufficiently cleared of its yist, and other feculencies, proves so offensive to digestion.

7. Since I can in no wise apprehend the dissolution of Victuals in the Stomach to be caused by heat, fermentation, or any cutting corroding acid juice, no more than Gold,

which the extremity of heat will melt, and not dissolve, nor will a strong corroding *Aqua Fortis* touch it, yet a small proportion of fluid *Mercury*, (which in that form hath no manner of a corrosive sharpness in it,) with the assistance of a very little warmth, doth in a short interval of time very expeditiously and potently, by its most subtil particles insinuating into its pores, though more close than in any body whatsoever besides its self, tare it asunder, dissolve, and divide it into the minutest particles. In the same manner I do conceive, that all sorts of Victuals, be they hard or soft, are as easily and readily digested in strong and sound Constitutions, by the most subtil saline particles of the Body, (which are the Animal spirits) steaming in clouds out of those large Nerves of the sixth pair, that are inserted into the Stomach, and their numerous branches that are disseminated through its tunics, which forcing into the pores of the alimentary substances, tare them asunder, divide, and dissolve them into the minutest particuls, and being mixt with the moisture of your Drink, are converted into that juice we call Chyle, Hereunto the warmth of the Stomach derived from the Arteries, and cirrounding Bowels, is very assistent, though it hath been oft observed, that some whose Stomach hath been commonly felt very cold by themselves, yet nevertheless had a very potent digestive faculty, that would subdue the hardest and rawest of meats.

8. Now when the inward coat of the Stomach (*Tunica rugosa*) is cover'd with too much slime, (for it is necessary it should be cover'd with a little, to defend it from the sharpness and roughness of all sorts of Vitruals it receives) so as to stop and plaister up the pores of the Nerves, whereby the foresaid most subtile saline Particles are in some propotion hindred from flying out, the digestion becomes slow, laborious, painful, and difficult, confecting a slimy chyle, which in process of time doth turn into many sorts of Diseases.

9. Of those that drink thick, austere, or adstringent Wines at, or soon after Meales, or close their repasts with Quince-Marmelade, Chescnuts, Almonds, or the like, I have experimentally found, that in many, to whom either the lessning the use, or wholly weaning themselves from those Things, hath been advised, their digestion hath been soon reduced to its former Vigour, which before, by the continual closing of the Pores of the Stomach-Nerves, was exceedingly debilitated, by the foresaid clogging, and adstringent things.

10. It is likewise as consonant to experience, that those who usually drink any Wines, not being diluted with Water, or that commonly conclude their Dinners or Suppers with Banquets of Sweet-meats, Custards, Chescakes, Creams, and Gelies, do weaken, and in time destroy their Concoction, so as few of them are found to be long livers; because those before-mentioned materials containing a fermentative

tative Juyce, by raising a Fermentation, do extremely interrupt and impede the dissolution of Aliments in their Stomachs. Those Fermentations in the Stomach, upon Fermentative Edibles, are frequently causes, that produce those flushings in the Face soon after Meals, and at other times in many Women, and some Men that have weak Digestions, and contain something in their Stomachs that is Fermentable, against which drinking of Water, or Water mixt with very little Wine, hath oft proved an effectual remedy.

II. Some that have for several Years been afflicted after Meals with pain and disturbances in their Heads, drowsiness, uneasiness in their Limbs, palpitations, faintnesses, belches, huffings up, and tensions in their Hypochonders, and Bellies, have been totally cured of all their turbulent Symptoms, by throwing off all Malt-drinks, and Wine, and gradually using themselves to drink Water, when all other remedies were so far from giving them relief, that they rather aggravated their complaints. But what is more, it hath been observed, that Chronical-Coughs of many Years continuance, have been not only removed, but perfectly cured, by exchanging of Malt-drinks and Wine into Water, or into Water refresh'd with a little Wine. And those that have travell'd through *Germany*, and the *Low-Countries*, might have observed, that the strongest and healthfulest Bodies are found among the Boars, who for their ordinary Drink are scarce acquainted with any thing but

but Whey, or clear Water, which contributing so much to perfection of digestion, may very reasonably be esteemed the true cause of their Health, Vigour, and long Life. These and many more like instances do force this concession from me, that the choice of Drinks is of greater importance than of Edibles. When Fermentative Drinks, as strong Beer, and Wine shall disturb and retard Digestion, and cold Water which suppresses Fermentations (as appears in many Hysteric Women, that by drinking a Glass of fair Water, do in a moment turn off a fit) shall in many promote and enliven Digestion, how can it then be thought, that Digestion is caused by the heat of the Stomach, or by Fermentation?

12. Though drinking Water hath on several occasions proved successful to admiration, yet particular regard must be had to the Climate, season of the Year, Age, Sex, Custom, and other Circumstances; for should drinking Water be recommended to one, who from his Infancy hath been used to small Beer, and living in a Northern cold Climate, in a rough freezing season, and of a tender Constitution, very unhappy consequences must be expected from such unadvisedness. Wherefore, where change of Drink shall be judged necessary, from the continual use of strong Beer, or Wine, you may descend to small Beer, Barley-Water, clarified Whey, a weak Mead, thin Grewel, or the like.

C H A P. IV.

*Of the passing of the Chyle into the Guts,
and its depuration there.*

FROM what is here incidently discoursed, I return to a farther explication of the Digesture of the Stomach, where the Victuals being dissolved, and by continuance of Concoction smoothed, and brought to an equation, the Chyle doth then require depuration, which is a separation of the thinner and finer parts from the groser and feculent, by a Fermentative juyce, which I suppose to be an Acid, joyn'd to igneous Spirits, by an *intermedium* of some glutinous emplastick Particles, as may be discovered in Yest, or Levain. This Fermentation (I will only suppose) happens at the close of the Digestion, and begins to rarefie and huff up the Chyle in the Stomach, whereby the lighter and thinner parts become rising and swelling, and gradually work over the *Pylorus* into the small Guts, the Stomach in the same proportion contracting it self into a lesser and shallower compass, as it is emptying and growing less full, and distended, by which means the trajection of the Chyle is facilitated, until there is nothing left, but a gross and feculent acid juyce, serving to assist as a dissolvent to digest what may remain more difficult, be it some grisly

or

or finewy, or other tough hard part of the
 Victuals, Pye-crust, or any thing else that is
 more difficult to digest, than what is already
 wrought over the *Pylorus* into the small Guts;
 which being performed, the same acid juyce
 by its sharpness pricks and stimulates the Fi-
 bres of the Stomach, (contracting it self into
 a very narrow Volumn) throws that also, to-
 gether with what it hath dissolved, over the
Pylorus. Whence I do give my self a proba-
 ble reason, why the latter part of the digesti-
 on is always acid, and why at that time we
 are subject to four belches, and how it hap-
 pens, that the fulness and distention of the
 Stomach, which most are sensible of at the
 end of their Meals, doth gradually lessen, and
 as soon as the four appears is quite allay'd,
 and the digestion finish'd. And if I attribute
 not too much to fancy, I do observe, that ma-
 ny Persons towards the end of Concoction, do
 perceive an uneasiness of heat all over, especi-
 ally in their Faces, extremities of their Hands
 and Feet, but particularly those that are weak-
 ly, as Hypochondriacks and Hystericks, who
 about that time, and a good while after, are
 subject to have flushings in their Faces, and
 their symptoms (as faintnesses, palpitations,
 roaring Winds, &c.) set into motion.

2. Upon the dripping of the Chyle into the
 small Guts, the Fermentation is considerably
 augmented, by the meeting with the excre-
 mentitious Juices from the Glanduls of the
Pancreas, and *Mesentery*, mixt with Gaul from
 the biliary Vessels, whereby the Chyle is
 wholly

wholly depurated of all its feculencies, which being separated, are term'd excrements of the Belly. That there is such a fermentation in the Guts, appears by the tension and intumescence of the Belly, in some more, in others less, which may be perceived two, three, or four Hours after Meals, according to the expedition of their digestion, separation, and subsequent fermentation.

3. As I am not very flexible to recede from the general opinion of the Antients and Moderns, importing, that the first Concoction is performed, either by vertue of the heat of the Stomach, or by force of Fermentation, as it is asserted by most of the learned, that were cotemporaries with the famous Dr. *Willis*, and others that do succeed him: Neither am I willing to be thought so criminal, as to be contumaciouly guilty of Heresie in Physick, yet its pardonable, if not allowable, to be Shismatical in ones proper opinion, which in all Mankind is free, and not to be compelled; and therefore I do declare, that nothing but late experiments of no small number, do induce me to retract my former sentiments of this, and many other matters in Medicines, as firmly believing, what I have expressed concerning the first Concoction, and Fermentation, as that the Sun is the cause of Daylight; though at the same time its very possible for me to be under a mistake. But whether all this be really true, or only in appearance, I am thence provided with the solutions of hundred of difficulties, offering themselves

selves on those subjects, and the full and plain discovery of the causes of many, if not most Diseases, and what is beyond all, not unsuccessfully conducted in the practical part, which to me is a satisfaction beyond what I have met with, either in conversing with Printed Authors, or with Men reputed very learned and experienced in the Faculty.

4. Upon the well beginning depends the well finishing and compleating, the Stomach being the beginning of the whole Body, it is from the true Knowledge of its fabrick, Constitution, Action, or Operation, the knowledge of the Constitution of all the Bowels, their Actions, and Operations of the whole Animal is derived. The Stomach is the only and true tuning part of the whole Body, which being well or ill tuned, causeth a Harmony, or Discord of all the Bowels. The Stomach being strong and vigorous, performing its Office, or Action, and Operation in perfection, renders the Body Strong, Healthful, and long Lived; but in proportion, as it is defective in any part of its Office, Diseases in it self, and all other parts of the Body are engender'd, answerable to the degree and quality of its defect, and to the dependency all the Bowels have on it; for being the Laboratory of the whole, whatever is ill prepared here, cannot be mended afterwards, by any of the succeeding Bowels, the Chyle being vitious or corrupted, can never be converted into good Blood, nor that into good Animal spirits, no more than you can make good Butter

ter or Cheefe out of fower or corrupted Milk. And as most, if not all internal Diseases, (Epidemic and Epidemic excepted,) are Originally produced in the Stomach, they are likewise to be cured by the Stomach, internal Remedies exerting their first and stronger force upon it, the vertues whereof it afterwards transmits to the part Diseased. Neither is it to any purpose, to pretend to cure any internal Disease, without first of all having put the Stomach into good order, which done, most Diseases are ready to go off of themselves.

5. The Stomach bears an adequate Analogy to the root of a Tree, and may properly enough be called the root of a Man; for as the root of a Tree is the beginning of it, receives or draws the juice of the Earth, to prepare and convert it into Food for the Trunc, and all the Branches, and being well digested, transmits it to all the parts; in like manner, when the Tree is observed not to be thriving, or the Branches to be decaying, changing of colour, withering, or dying, where do they look for the cause, but at the root of the Tree? Even so is it with the nourishing of the parts of the Body, and the Diseases they are subject unto, in relation to the Stomach.

C H A P. V.

*Describing Medicines to preserve Health, and
their Preparations.*

BY the deduction from the preceding Discourse, my Opinion perswades me, that the weakness of the Stomach, and its faintly performing its Office, is only occasioned by the debility of the Stomach Nerves, and its numerous branches, by being plaister'd up by too much Fleam, gross acid dregs, indigestible Meats, or offensive Drinks, or other matter admitted into the Stomach, which by lodging there too long, assume a corroding Quality; or by too much heat, and too little moisture, are converted into a nidorous crudity. This supposed, I do believe, and have experimentally observed, that all those Corroboratives of the Stomach, whose vertue is commonly asserted, to consist in a gentle restrictive and warming Quality, whereby those slimy Humors are more firmly cemented, such as *Aromaticum Rosatum*, *Caryophyllatum*, Cinnamon-water, those hot spicy Brandy-waters, a red Tincture of Roses, Methridate, Treacle, all those Compound Electuaries framed of heating Conserves, Condit, and Peptick Pouders, are so far from contributing the least strength to the Stomach, that rather a contrary effect hath ensued, and being long continued, do carry danger with them. The
only

only means I have hitherto found to strengthen the Stomach, are proper absterfve Medicines, gently wiping off those clammy substances from the tunics of the Stomach, and the terminations of the Nervous branches, and among these I have not yet detected any thing, equal to a good *Elixir Proprietatis*, well prepared by a long Digestion in a Sand-bath, the proportion of the Ingredients being somewhat altered from the common, and something also substituted in place of the Myrrh: A drop of this shall exceed a pound of Peptick Pouders, Electuaries, and other sop Stomachicks. Do only keep your Stomach clean, you will certainly preserve its Strength, and prevent most Diseases.

2. It is not to be understood, where a heap or weight of crudities is accumulated, so gently absterging a Remedy can have a power to disengage the Stomach, no more than a wet Mop can be supposed to rid a Room of a heap of Rubbish, in which case something more stimulating is required, that may be used in all Seasons of the Year, be it sultry or freezing, without the inconvenience of confinement to Diet, or warmth of the Air, and without offence to the Stomach, or putting the Body into any disorder, to which purposes, the Pill I here now describe, I have Experimentally found to be effectually answering in most respects.

3. Take one Ounce of the clearest shining *Aloes*, which at the *Druggists* will cost about a Groat, or sometimes Six-pence an Ounce, which

this being free from any considerable dross, will not require any depuration. Pouder it in a Mortar, covered over with a brown Paper, having a hole in the middle for a passage to the Pestil, to prevent the little pieces of the *Aloes* from leaping up, while you are in the beginning of your pounding; For afterwards the paper may be removed. Observe to anoint thinly the bottom of the Mortar and Pestil, with a little *Florence Oyl*, to keep it from sticking to the bottom. When its reduced to a gross Pouder, by grinding it with the Pestil you must bring it to a smooth fineness. Put the Pouder into a small glazed flat-bottom'd earthen Pan, that will contain about half a pint, pouring upon it about a quarter of a pint of fair water, wherein hath been dissolved two drams of *Spanish* juice of Liquorish, which is done by slicing it very small, and setting the water in a porringer over a gentle heat; place this small earthen pan into one somewhat bigger, having sand in the bottom to the height of an inch, and afterwards filling it up to the brim. Set them over two piles of bricks, of three or four bricks high, laid flat. The piles must stand at such a distance, that they may reach the edges of the bigger pan, to support it. Then make a moderate fire of Charcoal under it, to heat the sand, to cause the superfluous moisture to be evaporated, until the *Aloes* is brought to the thickness of Honey. Or you may by dropping two or three drops on the back side of a plate to cool, make trial, whe-

ther it be reduced to the consistency of Dow; for if it be overdone, the mass being render'd bricky, will not only lose most of its virtue, but also its aptness of being framed into Pills; and if it be not evaporated enough, it will be sticky, and not apt to be brought to a Mass.

4. The lesser pan being taken off, when the evaporation is sufficient, before its quite cold, you must with a *Spatula*, or slice, take out the Mass, and between your Fingers, being a little anointed with *Florence Oyl*, or *Oyl of Sweet Almonds*, to prevent the sticking, rowl it into a round ball, which you may keep in a Sheep's Bladder, being likewise thinly wetted over on the inside with the same Oyl, for many Months, if necessary, without any great impair of its vertue.

5. A small piece of this Mass being form'd into six, seven, eight, or nine little Pills, of the bigness of a Pepper-corn, is a Dose sufficient to give two or three motions, according to the number of Pills, and the loose or Costive Constitution of him that takes them. The safety of this Medicine adds much to its Character, since the taking of one Pill or two more or less, imports as little hazard, as the taking it very oft, or in any kind of Season, be it hot or cold, unless your Body be subject to a Looseness, or the Hemorrhoids, or your Constitution be thin, hot, and dry.

6. By the addition of the juice of *Liquorish* the *Aloes* is design'd to be obtus'd in its too pungitive quality, whereby its apt to raise the

Piles,

Piles, and becomes somewhat less precipitating, and consequently hindered from lessening expectoration, which in this Climate is so necessary in Coughs and Pththysicks.

7. The same correction may also be attained, by dissolving the same proportion of clean *Aloes*, in half a pint of juice expressed from the contusion of an Ounce of *Bugloss*, or *Borraga* Roots, or a large handful of their Leaves, and stirring half a pint of warm water with them in the bruising, and clarified by subsidence, in letting it stand in a Sellar for a day or two, and pouring it off the Fæces or Dregs in the bottom. This evaporated in the same manner will produce a Mass, almost equal in goodness with the former.

8. I cannot hitherto observe, that the use of these Pills, though frequently taken, either once in a Week, Fortnight, or a Month, according to the time, the Stomach by reason of its degree of weakness in the digestive faculty may require, doth in any wise debilitate those, that may properly use them; but on the contrary, rather corroborate their Stomach, by assisting it to throw off that heap of rubbish, and crude Humours, which those that eat and drink plentifully, and either live sedentary Lives, as many that are Educated to Professions, or others that are not used to exercise or labour, are subject to engender, especially if naturally of a weak Constitution, or of an advanced Age.

9. For three or four days succeeding the use of these Pills, a good *Elixir Proprietatis* taken

taken Morning and Evening, in a proportionable Dose, hath by my Observation ever had the good effect of preserving Health and preventing Diseases.

10. To what I have mentioned touching the advantages of a familiar Acquaintance with those Mundifiers, both the Pills and the Elixir, the inquiry I made of a fresh colour'd vigorous *Dutch Burgher*, I casually met in my Travels, who exceeded the Age of four score, may in somewise add a confirmation. He did averr to me *Bona fide*, that for 40 Years last past, he had seldom or never omitted once in a fortnight, or sometimes sooner or later, according to the direction he received from his marks of fulness and uneasiness, to cleanse with Seny stewed with Prunes, from which custom he did derive his capacity of eating a hearty Meal of any thing he liked, without advising of the wholesomness, or easiness of Digesture, and at times of drinking a Glas of Wine to an Altitude, to accommodate his Friend.

11. As lesser Purgatives do rather contribute strength by their consequence, so the greater being properly used, do not carry that danger with them People commonly imagine, since I have known many, that for Three Months successively, have taken strong churlish purging Pills every Morning, some few days only omitted; I may say, some have swallow'd a pottle of strong Purgative Pills in a few Years, and lived in full health to a remarkable Age, and not without a libertine Mode of eating and drinking.

Whence

Whence its apparent, that the toughness of the Nerves, upon which the strength and action of the Bowels only depend, doth suffer as little by the strongest Purgatives, as an *India Cane* by a thousand times bending, which notwithstanding will recover its former figure and full strength. It were to be wished, that bleeding could be administred with the same safety, of which it may be justly said, that the Lancet hath, and doth in proportion kill more Men than the Sword, and it's as commonly observed, that those Physicians who do so generally practise it, know little else what to do; and on the other hand their Patients are as rash and prodigal of their lives, to submit to their heedless advice. As the first and second bleedings may be of great use to many Bodies and Distempers in the colder Climates, so I have ever remark'd, that the third and fourth have proved as detrimental, and not seldom fatal; having observed, that with two bleedings at most, succeeded with other proper remedies, incomparatively more continual Feavers, Rheumatisms, Pleurisies, and Phthysicks have been cured; then have survived those frequently reiterated bleedings, which in common Practice usually give the parting blow.

12. Its a consequence an Ideot inserts, because a Person having been blooded eight or ten times in a great Distemper, doth recover his Health, he owes the benefit of it to the bleedings, whereas it ought rather to be said, neither the Distemper nor bleeding could kill him.

13. To return from this Deviation to the use of Purgatives; tho' those that are strong, are required in great Diseases, they ought to be avoided in lesser Distempers, or where prevention is only intended; for all Purgatives deriving their power from a specifick fermentative Spirit, or Salt, by rarefying or huffing up morbidick Humours, and afterwards by stimulating the Nerves to throw them off after separation, when strong ones are taken, where no Disease is engender'd, they are apt to cause one by fermenting, or rarefying and stimulating the laudable juices or operating upon those dormant humours, which by strength of Nature, or assistance of mild preventing Purgatives, and abstersive Corroboratives, might easily have been worn off. Thus it hath oft been observed, that some by taking *Extractum Rudij*, have soon after fallen into continual Fevers; others through a preventing care to avert the Gout, have immediately fallen into a violent fit, upon taking *Elixir Salutis*, *Bromfield's Pills*, *Golden Spirit of Scurvy Grass*, or the like empirical Medicines, which is not all the mischief such sort of Purgative vendibles have occasioned, as being unskilfully invented, and more unskilfully prepared, since not a few have been thrown into mortal Diseases by the use of them. Yet I stand more amazed at the folly of Mankind, that is so easily allured by vain boasting and mendacious *Encomia's* upon *Laudanum liquidum* plainly prepared, or disguised by a solution of *Opium* into volatile oleaginous drops, to the frequent and

constant

constant use whereof, a Man being once debauch'd under pretence of ease, and quieting himself of a few Gripes, Fumes, or Vapours, he can no more leave it off for a Fortnight, a Week, or a Day, than a labourer his Bread and Chese, or a Man throw off his Coat and Waistcoat in a hard Winter, or a Brandy-Drinker forsake his Spirits and return to small Beer. Using ones self to such plain or disguised Opiates, is like making a contract with the Devil, to live easie and well for a few Years, upon condition he shall have his Soul to torture afterwards: For certain it is, that the familiar use of Opiates, after some Months, or very few Years, either doth wholly desist from being friendly, by suffering your trouble or Distemper to return in a more horrible manner, or create a new one, incomparably worse than the former, or strangles you with an Apoplexy, or some other soporous Distemper, which is most amply proved by those, that make *Opium* their Sacred Refuge in every fit of the Cholick, Gout, or Stone, who seldom or never fail of a speedy *Exit*, by some incurable Disease of the Brain, in very few Years; and those that do advise such a lethiferous remedy for a common use to their Patients, have a greater title to a Halter, labell'd with an Inscription of *Mathews's Pills*, or *Pacifick Drops*, than those that murder a Man in the High-way. In what manner those fits of Gout, Stone, Cholick, and other sharp torturing Gripes, appear to me to be occasioned,

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and by what causes, I shall give my opinion after this following interlocution.

14. I have in the preceding Discourse given you my sentiment, that to preserve Health, and prevent Diseases in valetudinary Constitutions, (for strong vigorous Bodies stand in no need of other preservatives, or preventives, than moderation in their *Non-naturals*, the knowledge and sense whereof, Nature hath implanted in all other Animals, as well as in Men,) no better ways and means can be used, than applying at certain intervals, to those cleansers or abstersives here before mentioned; as for *Aurum Potabile*, or any pretended *Lapis Philosophorum*, or all *Faber's Quintessences*, upon their just trials, they have been found to contain less vertue in preserving Health, than a good Chicken Broth.

15. You may remember a caution was given in one of the foregoing Paragraphs, interdicting all Aloetics to thin, hot, and dry Bodies, and such also as are subject to the Hemorrhoids; and in regard that such Constitutions, especially when promoted in Years, do also require the keeping the Stomach clean, and free from all slimy and nidorous crudities, I do recommend a good *Lenitive Electuary*, not the common, which is so ill contrived, and filled with rubbish. This following description gives you the form of an easie, gentle, and effectual Laxative. Take four ounces of the best *Cassia Fistularis* newly drawn, and evaporated to a consistency, (the manner of doing it you may read in a Treatise,

To preserve Health. 41

rife, called the *Family Physician and House Apothecary*,) *Rhubarb* powder'd, white *Mechoacan* grated and powder'd, and clean *Rhenish Tartar* powder'd, of each a quarter of an Ounce, sweet *Fennil-Seeds* powder'd, a Dram and half, Syrup of *Marsh-mallows*, as much as will suffice to make it into an *Electuary*. You may take hereof a quarter, or half an Ounce, or sometimes a whole Ounce, dissolved in a quarter of a pint of thin grewel, barley-water, posset, or thin Chicken-broth, once in a Week, Fortnight, or a Month, according to the direction given concerning the Aloetics.

16. *Rhenish Tartar* I do prefer for a Laxative, far before Cream of *Tartar*, which doth lose all or a great part of its solutive vertue in the preparation.

CHAP. VI.

Causes of the Stone, Gout, Cholick, Pleurifies, Rheumatisms, Apoplexy, &c.
Assign'd from a different Hypothesis.

I. **T**ouching the causes of those pains, which are felt to be the acutest and most exquisite of any by them, that suffer the Stone, Gout, Cholick, and sharp dry gripes; certain sharp subtil ferosities, or rather a vitiated lymph discharged from the Brain through the Nerves on the extremities, being there lock'd up, cause those corroding Gout-pains, upon those sensible nervous parts, though sometimes ferosities

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ries, and lymphatic fluors, dripping from other vessels, may cause great pains, but less sharp, and being more subject to be incrassated, may cause swellings near the Joynts. The same subtil nervous serosities, or vitiated *Lympha*, being thrown upon the Kidneys, rare and vellicate their most sensible membranes to such a degree, that scarce any torture can equal it, and that sometimes, though seldom, without the least suppression of Urine, but for the most part with a total, or partial suppression, and a great sharpness of Urine, which is then called a Fit; the pain which at other times the Stone in the Kidneys doth occasion, being only a heavy obtuse pain of a long continuance, and more frequent returns, which at great intervals, as Spring and Fall, doth invite those cutting serosities to the part, and then also are the greatest Fits; for I cannot conceive that the Stone turning angular, and grating upon the Membranes, is so general a cause of a Fit of the Stone, as many of the Learned do imagine, since a Stone once removed out of its bed or seat, whereto its cemented by a glutinous tartarous slime, can easily, if ever return to its place, and be there fastned again as before, for which reason Physicians are very cautious of administering strong Diuretics, for fear of driving the Stone out of its place. Neither do I believe, that those bloody Urines, which are so frequently made by Nephritical Patients, are caused by the corners of the Stone being moved, and wounding or grating of the Veins, but are rather

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ther caused by a sharp *Serum* corroding the mouths of the vessels, or blood may be squeezed out of the vessels by the internal swelling of the *Parenchyma* of the Kidneys. It doth oft happen, that some of those forementioned most subtil limpid serosities have taken another channel, through branches of the same Nerve, that tends to the Kidneys, being divaricated and inserted into the great gut of the Colon, where they cause that great pain, (though less acute than the other, that part being by much less sensible, than the internal membrane of the Kidneys,) which is termed the Stone-Cholick. Since then this acute pain in the great Gut cannot be caused by the Stone, at that distance, its more than probable, that those most exquisite pains in a fit must be occasioned by some other cause, which by many Arguments to me can be no other, than the foresaid serosity. *Secondly*, you must consider also, that all Opiates being inwardly taken, perform their Operation by exerting their power upon the Brain, *in principio nervorum*, in withholding the influx of the Animal Spirits, (that communicate sense to the Guts,) and streightning the Nerves, whereby pains are not only appeased in any singular part, but in all parts equally, supposing they were all in pain. *Thirdly*, you are to conceive, that there being a digestion perform'd in the Brain, in converting the Arterial Blood into Animal Spirits, there must be a solution, and afterwards a separation and expulsion of Excrements, which in part are a limpid serum, that is abandon'd

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to the ventricles of the Brain, which are the proper receptacles of that Excrement, as much as the thick Guts are of the Excrement of the Chyle, or the Bladder of the Urine, being the Excrement of the Blood. *Fourthly*, this concession is also required, that this most subtil sharp excrementitious serosity, having quire filled up the ventricles of the Brain in a greater measure, than they can well contain, or throw off through those passages Nature hath ordained, the thinnest part is forced into the *principium nervorum*, (the other part being received into the Veins and *Lymphæ-ducts*) and carried either to the Extremities, or Kidneys, where it causeth the Gout or Stone, or to the Teeth, where it occasioneth a most exquisite Tooth-ache, or several external parts or joints, producing those violent pains, that are termed a Rheumatism, or to the *Pleura*, where those shrieking Pleuratic pains do ensue. Summarily I do believe, there scarce happens any pain, (unless caused from without,) Tumor, or Pustul, where this nervous Excrement is not a principal cause, which may be more plainly explained in another place.

2. Against this Discourse may be objected, That the Nerves obtaining no visible hollowness, cannot be supposed, to transmit such a quantity of *Limpid Serum*, as must be conceived to cause those before recited Diseases. *Secondly*, That its uncommon, and not natural, for any sort of vessels in the Body, that are destinated to contain, and convey their natural

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natural and proper Liquors, Juices, or Humors, to convey any other that is excrementitious, or præternatural. To the first its answered, there must necessarily be proportionable cavities in the Nerves, to contain such great measures of Juices, as have been frequently observed to drip from Nerves, though small ones, that have been cut through in Wounds, and much more from great Nerves; and therefore those larger Nerves near the Brain must be thought capable to contain a very copious quantity of moisture. If the Nerves when cut out of the Body and Dead, do not shew any visible cavities, it is because being emptied of their Spirits, and a great part of their moisture, their pores and channels do subside and fall to a close compactness. Besides a Nerve that is cut out, and grown from a greater bigness to that of an ordinary packthread, when its dried and condensed, its reduced to the smallness of a fine Thred or Fibre, which when it was tumid within the Body, and fully extended, must necessarily have contained a great hollowness, though divided into innumerable very small or minutest passages. In answer to the Second, it hath been more than once observed, that purulent matter from Imposthumations in the Lungs, and *Pleura*, hath been evacuated through the Kidneys and Bladder by Urine, whither it hath been circularly conveyed by the veins, that have taken it up. The thinner part of the Turpentine, that by Glyster hath been injected into the great Guts, hath been

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been taken in by the vessels, and by circulation carried to the Kidneys and Bladder, as appears by the Urine, giving by its strong smell of Violets a plain evidence of it. True it is, these instances are not natural conveyances, neither is it to be understood so of the Nerves, but to be preternatural.

3. This premised, if you apprehend this *Hypothesis* to be only probable or apparent, (which I do believe to be Truth, though at the same time I must own, that I do retract from my former Opinions, being thereunto induced by sundry Experiments and Observations) it must necessarily follow, that Opiates frequently used, do at length not only with-hold, but intirely stop the afflux of the Animal Spirits, and closely shut up the beginning of the Nerves, whereby those acute serosities are pent in, and thrown back into the medullar substance of the Brain, which hapning an Apoplexy, Palsie, Lethargy, or some other Mortal soporous Disease must unavoidably succeed; and hence it is, that in all those, who expire upon their seizure with those Distempers, the anterior Ventricles of the Brain upon dissection, do ever appear filled with such a sort of acrimonious limpid serosity, the Nerves and other vessels being either too much filled, or too much closed by subsidence, obstruction, or otherwise, to admit of a regurgitation thence.

4. Notwithstanding though the daily, weekly, or frequent use of Opiates is most certainly attended with most pernicious consequences

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ces, yet the extraordinary and stupendious benefit it imports, even very oft to the recovering a Man from the jaws of Death, when cautiously and necessarily advised in a fit of intollerable pain, a profuse Hemorrhage, an impetuous Catarrh, violent Vomitting, a flooding *Diarrhæa*, long and strenuous Hysterick Fits, when they begin to threaten danger, want of Sleep for many Days and Nights, and such like urgent symptoms, may give a just cause to hold a correspondency with that or the like Medicine, provided it be not too familiar, and be very well prepared, and that in the interval you prevent the necessity of calling this dissembling pacifick Friend in again, by removing the cause of those hazardous Diseases, and that the Patient have Strength, and Spirits enough to wrastle with such a fallacious and dangerous Guest, should he prove too rude. Wherefore I account it the greatest boldness in so many little Quacks and empiricks, even some Widwives, and Nurses also, who being intirely destitute of the necessary skill in preparing this ruffian Juice, and much more of the true knowledge of applying it, dare assume the confidence of administering it so indifferently to the loss of so many Lives, who in my Judgment can scarce have too severe a Law made against them, especially where a Man may be Murder'd privately, without giving the least jealousy, that any thing else besides his Distemper killed him.

CHAP. VII.

*Hypotheses of the motion of the Heart,
and of Respiration.*

I Have for a long time with an implicate Obedience submitted to the *Dogmata* of the Ancients, confirm'd by the approbation of the Learned succeeding Ages, as appears in former writings, touching the Animal Spirits and Pulsation, which latter in the Heart and Arteries is by them resolved, to be caused by a pulsifick faculty in both, or as some will have it, originally in the Heart, and from thence derived or continued in the Arteries. This sort of explication now appears to me very negligent, and universally applicable to any thing; for to say the pulsation is caused by a pulsifick faculty, is equally to saying, that Sight, Hearing, Vomiting, or Purging, is perform'd by an Optick, Auditory, Emetic, or Cathartic faculty; or, to be shorter and more general, by a specifick or occult faculty; from which any inquisitive person can receive but little satisfaction, or scarce make a solution of any *Phænomenon*, with the least advantage to the practical part of Physick. Wherefore to make my marks bear the better, in resolving many doubtful Queries, and serving for a true and safer conduct in the practick, I do rather make choice to say, (in imitation of Copernicus's affirming the

Hypotheses Of the motion of, &c. 49

the motion of the Earth to the exclusion of that of the Sun or Firmament,) that the Heart and the Arteries do not move the Vital or Arterial Blood, but that the Blood moves the Heart and Arteries to a pulsation; in the same manner as may be conceived, that the Air pressing and filling the Lungs, at the same time press the Air, that fills the interstice between them and the Diaphragm, and in a great measure moves the latter to a dilatation in the *Inspiration*, lifting up at the same time the Belly with all the included Bowels, and crowding or condensing the ambient Air, the weight whereof (if I may so call it,) or its inclination to be relaxt again, (in endeavouring to return to its former position,) together with the fuliginous steams, that are forced out of the whole circumference of the Body, in their turn cause the retraction or repercussion of the Belly and diaphragm, in the *Expiration*; for its a plain and received Doctrine, that the motion of the Diaphragm, which is accounted a great instrument in Respiration, is as much natural, and more natural I may say, than it is spontaneous in Beasts and Infants, or voluntary in Men; and I do farther conceive, if there were no Diaphragm created in Men and Beasts, the ambient Air is sufficient, to set the wheels of the Lungs on going: For there are abundance of moving living Creatures or Animals, that have Lungs, and do inspire and expire, on which Nature hath not bestowed a Diaphragm. So that the great use of the

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Diaphragm seems to me, to be an instrument of expulsion, in causing, or chiefly assisting to exonerate the Guts of its Excrements by Stools, the Stomach of its offensive contents by Vomir, and the Lungs by Coughing. It may be likewise compared to a *Flabellum*, or Fan, that moves and ventilates all the internal Air contained in the great cavities of the Body. The motion of this internal Air, I do conceive, is as much assistent to the motion of the Spirits and Blood in the Arteries, Veins, and Nerves, and to the peristaltic motion of the Stomach, as the Air and Wind is to the motion of the Sea, which latter the greater it is, the higher the Waves are moved. *Secondly*, Natural Philosophy doth Teach us, That as much Air as is inspired and admitted into the Body by the Lungs, so much Air must necessarily be forced out of the Body, to make way for its entrance, which plainly tells us, that the inspiration by the Lungs is the cause of an universal transpiration through the whole Body, and that the same ambient Air being lately squeezed out of the Lungs, must necessarily by expiration return into the Body again, through the ambient pores, to make way for that, or else you must allow a vacuum, or void place in the Air, which is impossible, for a place (*locus vocatur, quia continet locatum*) is that which containeth and circumscribes something, and how can a place then contain nothing, which is a vacuum? *Thirdly*, I take the Diaphragm to consist of two Muscles, which appears plain enough

enough in the dissection and narrow inspection of a Bullocks Midriff, whereof one is made use of in the dilatation, and the other in the contraction of the Breast; for its absurd, to believe, that the same muscle can perform two contrary motions.

That no living Creature can subsist without the Air, and perspiration, is allowed by all, but for what Reason, or what use or benefit the Air doth afford it, is only slightly asserted, *viz.* That it is for ventilation only, that is to say, it gently fans and moves the living Spirits, and therein assists them in separating Fuliginous, and other Heterogeneous little Bodies or Particles, which otherwise would choak, or suffocate the said living Spirits. In the same manner I do conceive, That the Air in ventilating the focal Fire, or any burning flame, doth assist its most subtil particles in separating and expelling fuliginous and other corpuscles, and receives them also in those places, which it (I mean the Air) leaves to fill the places, left by the said fuliginous and other corpuscles; so that a Fire or flame seems to be extinguish'd, or rather suffocated, through want of Air, because it hath no places to depose its fuliginous and other corpuscles into, and stands in need of its assistance for ventilation and gentle motion.

From this premised Discourse, I deduce these consequences to my self. 1. That upon the goodness of the Air (which consists in a just temperament, a due thinness, and clearness or purity) depends chiefly the Health

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and long life of Man. Too much heat, or too great thinness of the Air moves the Animal Spirits too impetuously, and consequently disperses and consumes them, weakens the Body, and hinders all Digestions; whence it is, that people are short lived, and weakly in the *Indies*, long lived and strong in the *Northern* Climates. Frequently and gently moving, and oft changing the Air from one place to another, though only out of one room into another, seems to me to conduce very much to Health, because by those frequent removes you avoid inspiring the same fuliginous Air, which you do expire; on the other hand, they that live sedentary Lives, that are slothful, or much addicted to lie in Bed, are seldom Healthful, but commonly crazy, and dull in their senses.

2. If change of Air generally is of so great an Advantage, it is far greater, and consequently of necessity to those, that labour under any Distemper of the Lungs, or any kind of difficulty of breathing; so that I have observed, that many cannot be cured without change of Air, notwithstanding the assistance of the best and most proper Applications, which sometimes the Air alone doth Cure, and other times being assisted with very small Remedies.

3. That using oft violent motion, and continued long, doth at last render the Body Distempered, and is very contrary to Health; for its observed, few of those are long livers.

4. I am apt to believe, That in the Air are contained most subtil corpuscles, that are homogeneous-

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homogeneous to the Spirits, (though in some kinds of Air more, in some others less,) that nourish or multiply, increase, or are added to the Animal Spirits, whereby the Body is considerably strengthened. *Lastly*, I do believe, That the Air is the *Primum movens externum* of all living Creatures; for by inspiration it moves all the Animal Spirits, (as after my manner I have shewed before) which move all the humours and muscles of the Body. Take away the Air, and Life (which consists in motion of the Animal Spirits,) ceases at the very moment.

C H A P. VIII.

Of the motion of the Blood, and the cause thereof, also of its quickness or slowness.

I. **I** Return to the Heart, which to me appears for use, like unto a draining Water-Mill, serving to throw off, and disperse the water to any parts, whither the Wheel shall cast, or direct it by its impulse; in like manner the Heart is an instrument, whose principal Office is, to throw the Arterial Blood to all parts of the Body; And as the spirituous and forcible eruption of Water out of a deep cavern of the Earth at the source or spring head, together with its being highest in situation, (in respect of the declination of those places, to and over which its impelled,) is the cause of that motion, so the Brain may very probably

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be esteem'd the Source, as being the highest scituated; whence the Animal Spirits do forcibly rush out into all the Chanals, Humors, and Parts of the Body. Wherefore, I suppose the Brain and its Animal Spirits, in respect of the Microcosm, to be what the Sun and its Spirits, or Particles (being its Irradiations or Beams) are, that are distributed to all parts of the Terraqueous Globe; where motion is perceiv'd, penetrating to the deepest bottom of the Waters, and through the closest and most compact heap of Earth, into its Bowels, where Metals and other subterraneous Bodies are engender'd. In like manner do the Animal Spirits penetrate, from the highest part of the Body to the extremest parts, as Toes and Fingers, which the sense of Feeling doth attest to us; and likewise to the deepest parts of the Bowels. I do not imagin, that the Animal Spirits being transmitted through the Nerves, must arrive to the extremities of them, before they can be dispers'd to all the circumjacent parts; but that the Nerves are pervious throughout all their extent, with lateral Pores, or minute Chanals, through which they burst out in their descent, giving motion to all parts moveable. Neither do I believe there are any Vital or Natural Spirits, (as they are commonly term'd) but they are all Animal Spirits (though in a greater Proportion in the Arteries than the Veins,) that occasion the Blood to circulate; for to me it appears improbable, that the motion in the Arterial Blood, should cause the Blood in

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the Veins to move at so great a distance from the Heart, when necessarily their motion must be spent at the Capillars, if the force of motion in the Arteries, be by experience found to be less and less, in proportion of its greater distance from the Heart. But that the same motion of the Arteries, should cause the motion of the Animal Spirits, seems to me much more absurd; for the Animal Spirits being incomparatively more subtil, and infinitely stronger and more forcible (as appears by moving all the Joints together with the whole Body) can in no manner be conceiv'd to be moved by Vital Spirits, that are much more gross, and of so little force, that they cannot make the least impulse upon them. If these Maxims be true, that *Entia non sunt multiplicanda præter necessitatem*; And *In omni genere oportet ut sit quiddam primum, Principium numeri est unum, & omnes numeri consistunt ex uno*, (or if I may so say) *DIVERSIS UNIS*; The Brain doth justly challenge the dignity of being the first and sole principal part of the whole Body, having an absolute Empire and Command over all other parts, performing by its Animal Spirits all the Motions, Functions, Actions and Offices of, and in every Bowel, Humor, and all other subservient Parts, which are only Instruments that modify and determine the said Spirits. This whole premis'd Discourse is plainly proved to me, by this sole Argument. The whole body of Man is created for the external Senses, and local Motion, and these for the internal, viz. Understanding, comprehend-

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ing humane or rational Imagination, common Sense and Memory, which are only three distinct Acts of one sole and chief Faculty of Understanding; of which, the *Brain* is the Seat, and the *Animal Spirits* the Instrumental Cause; so consequently all the *Parts* of the *Body* must be created, to be subservient to the *Brain* and its *Animal Spirits*. Secondly, That the *Animal Spirits* do move the *Arterial Blood*, and the *Heart*, is clearly evinc'd by the Observation of Passions. The Sight, or Hearing, perceiving any dangerous Object, conveys it to the understanding Faculty in the *Brain*; which, by retracting its *Animal Spirits*, do at the next instant, cause a slow languid motion upon the *Blood*, *Heart*, and sometimes wholly stop it. On the other hand, upon perceiving a pleasing Object, a crowd of *Animal Spirits* are impell'd into the *Blood*, which immediately occasions a quicker and more lively motion in the *Blood*, *Heart* and *Arteries*, as may be felt by their pulsation: Whence it appears, 1. That the Seat of Passions is in the *Brain*, and not the *Heart*. 2. That the *Animal Spirits* are perfused thro' all the *Arterial*, and consequently *Venal Blood*. 3. That nothing in the *Body*, doth move so swift as the *Animal Spirits*. 4. That the whole *Body* is pervious with Pores, and most subtle Chanals, of various Figures and Dimensions. *Mercury* by external unction, or fumigation, is let into the *Body*, through the ambient external Pores, even to the *Bowels*, and the *Brain* it self, though applied never so remote.

Aloes,

Aloes by friction about the Navil, or any part of the Belly, passeth through the Pores to all the circumvestient Membranes and Muscles, until it arrives to the Guts, where it moves Stools, kills and expels Worms. *Tobacco* applied to the Wrist, by penetrating through the external Pores to the Vessels, Humours and Spirits, by circulation reaches the Stomach, provoking it afterwards to Vomit, and in some Bodies violently enough. *Cantharides* externally applied commonly cause sharpness of Urine, and sometimes bloody. Opiated Unguents, though applied to the Soles of the Feet, soon reach the Brain. On the other hand, I have oft observ'd the scent of some Medicines, which I us'd to give in Venereal Distempers, to pass through the Body to the external Skin, which always prov'd a certain sign the Patient would be cur'd. By all which it appears, that those foremention'd Externals were impell'd through the ambient Pores, by the Air lately expir'd, and crouding into the Body again, at the next inspiration, and that those Antivenereal Medicines, were driven out of the Body to the circumferential parts, by the Air expiring. 5. That the Heart is not a principal part of the Body, but an instrumental and subservient part. 6. That the Animal Spirits are *Toti in toto*, & *toti in qualibet parte*, performing, as I said before, chiefly and principally, as the sole primar efficient Causes in all the Body, and in every part thereof, all the Offices, Functions and Actions, except the Rational; wherein its only

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Instrumentally subservient to the *Anima Rationalis*. I must confess, that this Paragraph is not very Philosophically express'd, neither am I endu'd with Sense enough to defend it from all Objections, and seeming absurdities, and therefore, ought rather to be referr'd to Metaphysicks, or a *Credendum*. 7. It also follows, that we need give no greater respect to *Cordials*, then to *Hepatics*, *Pulmonics*, *Splenetics*, or to any other appropriated Medicines; but the chiefest and principal Medicine ought to be reputed a *Cephalic*, so that instead of saying *per Excellentiam*, this or that is a *Cordial*, we ought to say, its a *Cephalic*; for all those that are commonly call'd *Cordials*, are no other than true *Cephalics*, and no otherwise helpful, than by relieving the Animal Spirits, and comforting the Brain and Nerves. Moreover, all the Hypochondriac and Hysteric Symptoms, as Palpitations of the Heart, various Pulsations, sometimes slow, quick, low, or intermittent, Faintnesses, Swoonings, faint Sweats, Convulsions, swimming in the Head, (*Vertigo*) choakings in the Throat, stifled, difficult, oppressed, and insensible low Breathings, frequent Sighing, tottering weakness of the Joints, desponding sorrowful thoughts, Urine sometimes as clear and limpid as fair Water, othertimes white, turbid and muddy, sometimes high colour'd, othertimes pale; Gripings, croaking and thundering Noises about the Bowels and Guts, Vomiting, and sharp continuating Pains at the Stomach, Belchings, Yawnings, Dimness,
and

and recurring darkness of Sight, (*Scotomia*) noise in the Ears, creepings between the Skin, Crying or Laughing, or maddish Passions, besides many more, are all Symptoms of a diseased Brain and Nerves, preternaturally affected, discompos'd or vitiated Animal Spirits, and are reliev'd no otherwise, than by Medicines, that relieve and operate upon the Animal Spirits, and immediately by them upon the Brains and Sinews; such are chiefly oleaginous volatil Spirits, and more especially those that consist of a penetrating durable Sulphur; for if they are only Volatil Spirits, (tho' in that form they are experimented to be very helpful) they exert, lose, and spend their Virtue before they can arrive to the Brain; and therefore its necessary they should be oleaginous and sulphurous, and consequently more lasting. It is also found experimentally, that gentle Narcotics have a great influence, in suddenly suppressing all those recited Symptoms; which being universally owned to operate only upon the Animal Spirits, Brain and Nerves, is a manifest Argument, they are occasion'd by an ill affected Brain, and Vitious Animal Spirits. All these prenumerated Symptoms do accompany a preternaturally affected Brain. and must be acknowledg'd to proceed from vitious Animal Spirits, viz. Convulsions, tottering weakness of the Joints, sorrowful Thoughts, dimness of Sight, noise in the Ears, &c. excepting Palpitations, intercurrent and various Pulsations, which cannot be thought a Primar, but a Secondary

(per

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(*per deuteropathiam*) Affection of the Heart, occasion'd through the Vitioufness of the Animal Spirits, stimulating, or othertimes retarding the Fibres of the Ventracles, and Valves of the Heart in their motion. How and by what means the Animal Spirits may be vitiated, either by the ill mixture of the constituent parts of the blood, and its impurities, and commixtures with adventitious, or other noxious Particles, will take up more room to explain, than I purpose to allow here in this small Volumn, which otherwise may easily be render'd intelligible, or applicable by every Judicious Reader in Physick, and therefore I shall forbear any further Discourse about it.

8. To corroborate my Assertion in the preceding Paragraph, *viz.* that Cordials ought rather to be call'd *Cephalics*, may be plainly deduced from the sudden Relief, Patients in Swoonings and Faintnesses do receive, from the scents of Spirits of *Sal Armoniac*, of Hartshorn, *Cranium humanum*, *Sanguis humanus*, of *Galbanum*, *Assa fetida*, and the like; also from the friction of the Temples, with the thinner spirituous Oyl of Amber, which being admitted into the branches of the Carotidal Arteries, are convey'd to all the parts of the Brain, where they rouse up, quicken and stimulate the Animal Spirits, and disentangle them from any adhering offensive Particles, whereby the Patient being suddenly revived out of his Faintness, and Swooning, and the inordinate pulsation of the Heart reduced, is a manifest proof, that these Symptoms commonly are not depending
upon

upon any Primar Affection of the Heart, but upon the disturbance of the Animal Spirits. 9. Many have been much puzzl'd in some doubtful Matters relating to Infants in the Womb; as, Whether in that Station they have Respiration, and whether their Heart and Arteries have Pulsation; and consequently, whether the Blood in the Infant doth circulate, and whether the Animal Spirits exercise the same Functions which they do after it is come out of the Womb. I do conceive, the Infant, as long as it continues in the Womb, doth only live the Life of a Plant, and is like to a Sucker that receives its Growth from the Tree, in receiving its Nument and Augmentation from the Mother: it hath no Respiration, or as little as can be imagin'd; and consequently, that its Heart and Arteries do not undergo any Pulsation; neither doth the Blood circulate in its Vessels, nor do the Animal Spirits perform those Functions they are intended for after the Birth of the Infant. The Parts of the Infant in the Womb lying so compact and close, and every place fill'd up with Humours, Excrements and Internal Air, there is no room left to admit Air from without; especially being inclosed by two thick Members, and a surrounding Moat of Serous Humours: It being the External Air forcing into the Lungs is the chief Cause of Inspiration and Expiration, as I have expressed before, that being excluded, there can be no Respiration in the Infant in the Womb. What I have to say concerning the

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the Manner and Causes of Pulsation, may be best understood by a Comparison to the Sea ; which (tho' it be in the calmest Season) is subject to heave up and sink down, or to be dilated and contracted, as appears by its Waves, which is not unlike the Pulsation or *Diastole* (Dilatation,) and *Systole* (Contraction) of the Heart and Arteries. The Heaving up of the Sea I will only suppose to be caused by an Expansion and Rarefaction occasion'd by the Motion of the Salin Spirits of the Sea, of which it may be thought very pregnant by the strong Smell (being *a parte objecti* the Salin Spirits acting upon or vibrating the Olfactive Organ) of Sea-men's Clothes, and other things. The Air being crouded or condensed by the swelling of the Waves, forces, them down again by the Inclination it hath to recover its former place : In the same manner I do conceive that the Animal Spirits that are copiously perfused through the Arterial Blood do expand, dilate and rarefie it, which causeth the *Diastole* or Dilatation in the Heart and Arteries, whereby the Air that is enter'd by Inspiration into the Lungs and all other Ambient Parts of the Body, and filling all the Pores that are capable to receive it, is condensed and crouded ; they relaxing, beat back the Sides of the Heart and Arteries, which being streighten'd, have an Inclination to return; and then occasion the *Systole*, or Contraction. The fore-mention'd Comparison differs in this, that the Arteries are moved continually, in Contraction and Dilatation, throughout their whole

whole Length, reciprocally, all at once; whereas the Sea is moved into innumerable discontinued Waves, that are lifted up and fall again at opposite and different times; while one Wave rises, the other falls. To which I can only answer, Were the Sea coated about with a thick strong Coat, as the Arteries in proportion are, all the Parts of the Sea, or the whole Surface, would be uniformly heaved up at one and the same time, and fall in the same Order, as the Arterial Blood doth in Pulsation.

2. This Hypothesis (how probable soever, or true seemingly, it may be, I will not discuss at this time) implying the Necessity of Admission of External Air to cause Pulsations, explains that the Heart and Arteries of the Infant in the Womb do not pulsate regularly, or orderly; neither do I doubt but that the Animal Spirits do in some wise move the Blood, (which else by Stagnation, would be subject to Putrefaction,) tho' not circulate. And here a Question may be moved, Whether the Blood in its Circulation, or passing out of the Extremities of the Arteries, into those of the Veins, is pressed out by the Rarefaction and Expansion of the Arterial Blood by the Animal Spirits in the *Diaſtole*; whereby taking up more room, and as it were overflowing, it is squeez'd out; or whether it is forced out by the Vigour of the Animal Spirits, and the Compression of the Arteries in the *Systole*? But then another Question must follow; How, and by what Force, is the Blood mo-

ved in the Veins, where there is no sensible or manifest Pulsation? For to say that 'tis the Force of Pulsation doth move it out of the Extremities of the Arteries, into the Extremities of the Veins, through the fibrous, inter-curring, most minute Passages, or Pores, by Pulsation, or rather Protrusion: or thrusting forward, must run us into great Difficulties, if not Absurdities. For, *First*, Considering that the Force of Pulsation or Protrusion must be extreemly abated in the aforesaid Extremities of the Arteries, and more in the Inter-curring Passages, and yet more in the Extremities of the Veins, which suppose in the Toes, can you rationally imagine, that the Force of Pulsation, that is so very much diminish'd, if not wholly extinguish'd, can be sufficient to force and thrust forward through so great a Length (as reaches to so far a distance as the Heart) so great and weighty a Mass of Blood, which it must by Process encounter with in the bigger Veins, besides the Resistance it must meet with in the several Meanders, Turnings and Windings, and a great many Valves (making a great Resistance) of the said Veins, that will still yet more deaden the Force of Protrusion; and yet more, if the Body by streightness of Clothes, or lying upon one Side, suffer a Compression and Narrowness in the Veins and Arteries? *Secondly*, Suppose the left Ventricle, when fill'd, to contain two Ounces, more or less, of Blood (according to the Opinion of some Anatomists) in a Heart of a mean Size; and that, according to the same Opinion, by every

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every *Systole* the said two Ounces are with a violent Explosion, as if it were with a Spring, thrown into the Arteries, it must follow, that by every Pulsation so much is receiv'd and impell'd into the Veins, which being destitute of a forcible Pulsation to return it to the Heart, cannot possibly in the same length of time discharge it; especially, the Blood being now grown more condensed, incrassated, more fibrous, less spirituous, and possibly from a lower to a higher place, and through all the Valves, which as I said before, make a very considerable resistance. If then the Veins can not receive so much Blood, as is thought to be propulsed by two Ounces at a time, by every *Systole*, when probably they cannot receive a Dram or two at most, at every *Systole*, what must become of the remaining fourteen or fifteen Drams, that is by every Pulsation thrown out of the Heart? * It must

either return, and regurgitate into the Heart, upon which, either an intermittent Pulse must follow, or a total stagnation, and consequently Death. In short, to make the Veins capable of receiving as much, as by Pulsation is thrown out of the Arteries, you must grant as rapid a motion or flowing in the Veins, as there is in the Arteries, which all that have the least sense must deny; for the Blood in an *Arteriotomia* doth spurt out of the Arteries with ten times the force, and in ten times the quantity, in the same proportion of time, and consequently is moved ten times swifter. It must then follow, that in every *Diastole* the

* Abating so much Arterial Blood as is taken up in the nourishment of the parts, and in the supply of matter for animal Spirits.

Ventricles of the Heart are either not quite filled, or not entirely emptied in every *Systole*, which I do verily believe is so. By what is here discoursed, it appears, that very oft the cause of an intermittent Pulse is the incapacity of the Veins, by being obstructed in some place or other, to receive the proportion of what is thrown into them by the Arteries; and the cause of an universal stagnation may be thought too great a repletion in the Veins, wholly excluding the reception of any Blood from the Arteries.

3. Should it be allow'd, that the Heart by every *Systole* throws two Ounces of Blood (which some do assert the left Ventricle to be capable of containing) into the Veins, and that they receive it; then it will follow, that reckoning only 500 Pulsations in a quarter of an Hour, there must be circulated fifty Quarts; and consequently, that the whole Mass of Blood, or all the Blood that is in a moderate Man's Body (which is thought to contain from Eight Quarts to Twelve, according to the greater or lesser quantity of the fullest, or thinnest of Men, being in Health, must be circulated or moved round from the Heart through the Arteries into the Veins, and thence into the Heart again in three or four Minutes, and about a Pint every eighth part of a Minute, which must require a motion more rapid, and make a greater noise, than the *Thames* under *London-Bridge*. Such a career in the Blood must be supposed to make more way in fewer Weeks, than the

the Sea and Wind together do, in carrying a Ship to the *East Indies* in many Months. Besides, such a violent motion would not only burst the Veins, and break the Fibres of the Blood, but chern it into Red Butter, and Blue Butter-Milk. Moreover, motion causing heat, such a violence would immediately put the coldest *Scelander* into a burning Fever. It is observ'd, that the too violent and quick motion in a continual Fever, makes a separation in the Blood of the Oily sulphurous parts, swimming on the ferous.

4. That the Ventricles of the Heart are not fill'd by every *Diastole*, nor quite emptied by every *Systole*, appears plainly in Hypochondriacs, and Hysterics, who sometimes having a large, high and quick *Diastole*, (as may be felt by feeling the Pulse of the Wrist) and a low, streight, and slow *Systole*, shews that the taking in, must be more than the going out. Soon after the *Diastole* is chang'd from large to low, small and slow, and the *Systole* quick, which signifies a lesser repletion of the Ventricles, and consequently, that they were not fill'd as before. What can you think of a vermicular Pulse? Here you must allow, that the Ventricles are far from being filled in the *Diastole*, or emptied in the *Systole*. I do foresee, that it may be reply'd, that notwithstanding the Pulses do vary from large and full, to narrow and small, the Ventricles may be filled, because in those narrow, low Pulses, the sides of the Ventricles do fall, and then consequently may be fill'd accordingly: That is to

say, the Fibres of the Heart are relaxed, and so the Ventricles must fall into a narrower compass, like unto a Bag that's empty, for want of something to fill it; but then, still its a Sign they have a capacity of being fill'd, which they are not by every *Diastole*, as I have shew'd before.

5. From this premis'd discourse it must necessarily follow, that the influx of the Blood into the Ventricles, is the cause of filling them more or less, according to the proportion of the Blood flowing in, and consequently to that, that its the Blood moves the Heart by rarefaction and stimulation, according to the proportion of quantity, and quality of the Animal Spirits its repleted with. If the Blood be thick and gross, for want of Animal Spirits to rarifie and move it, the *Diastole* must necessarily be slow and low, because the Blood through its thickness, cannot enter in any great quantity, nor stimulate; if it be thin, much rarified, and full of good Animal Spirits, the *Diastole* must be large and high, and if very stimulating, quick. So that the variation of tunes of all the Pulses must be caused, in my opinion, by the quantity and quality of the Animal Spirits, and the Blood; and the causes of stagnation, intermission of Pulses, and several other affections of Pulses, of Apoplexies, and abundance of other difficulties cannot so readily be assigned, and reasons given thereof, but by supposing only (though it were really otherwise) that the influx of the Blood is the moving cause of Pulsation,

of the variation of Pulses. 69

sation, and not the Heart ; which notwithstanding all Objections, whereof in the next Paragraph I shall recite the chief of them, I do believe to be true.

6. That a Muscle is the cause of motion, its vulgar definition, or rather description doth imply, *viz. A Muscle is an Instrument of voluntary motion*, which seems to overthrow, what is by me asserted for a supposition, on which the proceeding Discourse of the cause of Pulsation doth depend ; and consequently that the Heart being a Muscle, must be the cause of the motion of the Blood. To which I do answer, That the Heart cannot properly be term'd a Muscle, because its motion is not voluntary, as must be own'd by all, but Natural, and if so, must be moved by an Intrinsic (in relation to the Heart) moving cause, which can be no other than the Blood and the Animal Spirits, wherewith its repleted: for *Quicquid movetur, movetur ab alio*. True it is, the fabrick of the Heart is very like to a Muscle, I should rather say to a two-fold Muscle; whose Fibres consisting of two different Orders, Positions, Figures and disseminations, do both meet in the Cone, exactly resembling a two-fold Tendon, so that one Muscle seems form'd for dilatation, or opening to admit the Blood, and the other for contraction, or shutting out, or dislodging of the Blood, both these analogical Muscles receiving their Animal Spirits from a branch of the sixth pair.

7. Touching the motion of the Blood in the Veins, which to me appears, cannot be caused by pulsion of the Arterial Blood, as being moved incomparatively slower, by reason of its consisting of thicker and grosser parts, and fewer Animal Spirits, and being much hinder'd by the Valves, breaking the force of its motion, which said motion I do suppose, is caused by rarefaction of the Blood, through the continual and forcible agitation of the Animal Spirits, by which means it's squeezed or pressed forward; and furthermore, I am apt to think, that there is a kind of pulsation in the Veins, but so weak and low, that it's scarce perceptible. It is likewise my opinion, that the local motion of all the Humours, whether natural or preternatural, or excrementitious, is caused by rarefaction. Before I leave this Subject, I think my self oblig'd to let you know, I am not so forgetful, as not to remember, that in some former Writings, I have set down some Opinions much different, and others contrary to these I have now declar'd, being misled by commonly receiv'd Sentiments of the Learned, and now (as I do believe, for I shall scarce be ever positive in any thing) better inform'd by many Experiments.

C H A P. IX.

Of Celebrated Remedies against Consumptions.

1. **F**OR the present I have detain'd the Reader long enough in Theoreticks, I will now make bold to offer some Observations on the Practick, the Vanity whereof in many particulars, appears to me very extravagant: And in regard I would avoid being troublesom, I shall only make choice of those Diseases, that are most universal, and begin with *Consumptions*, I mean such as are occasion'd, by an Hectick Fever, and attended with a chronical putrid Cough; namely, such as is caus'd by a putrid slime, and sometimes accompanied with an Ulcer in the Lungs, known by its purulent expectorations. I will not undertake here to enter into a discourse of its Causes, and Indications, that are to be drawn thence, but only recite such Remedies, to which many do attribute great Virtues, and make appear, how vain, fruitless and deceitful they are. By the way let me tell you, there are many consumptions, that may properly be so call'd, that are neither occasioned nor accompanied with an Ulcer in the Lungs, but sometimes in the *Bronchia*, other-times in the *Aspera Arteria*, and sometimes with no Ulcer at all, but very oft with an ulcerous

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putrid slime only. Passing by the gentle Purgatives, as *Cassia*, *Rhubarb*, &c. that may be necessary in the beginning, and sometimes in the Progress; I shall only examin the Remedies, that are so highly recommended against Ulcers in the Lungs, and ulcerous Coughs of Consumptions.

2. *Syrup of Turnips* is a very celebrated Remedy here in *England*, and no where else; which after it had been used by many in proportionable quantities, at seasonable times for three Month successively, they have notwithstanding all its Praises, gone off, without the least abatement of their Coughs, or improvement in their habit of Body. Neither can I any ways discover, whence those pretended Vertues should proceed, or in what part of the Turnip its wonderful strength doth lye. Its apparent enough, that the expressed boyld Juice is waterish and windy, not nourishing, nor abstersive, neither hath it such a cooling quality, as to have the least prevalence in abating the Hectic Fever; so that I do look upon it to be a foolish vain Medicine. True it is, that the Sugar in it may seem to allay the salin slime, smooth, and lenify the Gullet, which upon this occasion is ever very rough, and so in some measure seem to ease that part for a little time; but after it hath been some little time in the Stomach, turns into a very sour, piercing, and almost corroding moisture, which allowing after some considerable time it doth arrive to the Lungs and Windpipe, must under those qualifications render the

the said Parts more rough, and rather provoke, than in the least abate the Cough.

3. But *Ground Ivy*, alias *Ale-boof*, alias under several other Names, is the *Catholicon* of the Vulgar, and of many Physicians also; who appropriate it to the Eyes, Kidnies, Bladder, Lungs, and to the cure of internal and external Ulcers, proclaiming it the chief of all Vulneraries. These singular commendations do encourage many to use it in all their ordinary Drink; some for to cure and preserve their Eye-sight, others against the Stone, Gravel, Hypochondriac Vapours; and in Consumptions supposed to be caused by an Ulcer in the Lungs, it is entertain'd for a None-such. *Quercetan* the *Armenian* gives you his word, that with the Juice of it boil'd into a Syrup with Sugar of Roses and penid Sugar, mix'd with Flowers of Brimstone into a *Loboch*, he hath recovered many desperate Consumptives, who either in my opinion, were not in a proper Consumption; or Chymist like, boasted of what he never observ'd. All those eminent qualities of this *Ground-Ivy*, are supposed to flow from a diuretic and absterfive Virtue, as most Traumaticks are thought to do their feats by. But where this subtil Spirit, or bitter Salt is to be found, I am yet to seek. I have sundry times advis'd it to Consumptives, to be used sometimes singly in a Syrup, other times join'd to *Bugle*, *Speedwel*, *Sanicle*, *St. Johnswort Flowers*, *China root*, (and sometimes *Sarsaparila*) *Dates* and *Liquorish* boil'd to a good strong Decoction, to be sweetn'd

sweetn'd with Sugar of Roses, and taken at *Horis Medicis*; besides a smaller Decoction made with the addition of a few fresh Ingredients, to be drunk at other times. This though used ten or twelve Weeks successively, with a good Barly Broath and Milk Porridge Diet, I have observ'd to be as ineffectual, and unsuccessful, as all of the other celebrated Remedies I shall hereafter write. True it is, that many youthful, or otherwise strong Bodies, that have been molested with a long strenuous Cough, copious and foul Expectorations, so as a sensible wasting of the Flesh and other parts hath ensu'd, have been restored to Health, upon taking Pectoral Syrups, and Decoctions made after the forementioned Model, whence to those Remedies the Titles of *Infallible* and *Sovereign* have been attributed, whereas the Disease was not accompanied with an Ulcer in the Lungs, or an Hectic Fever, but remov'd by sparseness of Diet, and possibly change of Air, so that not the least advantages have been derived from these Pectorals, but rather a detriment; If you will with me believe, that all Sugars and sugared Medicines turn sour in the Stomach, and assume a sharp fretting, and sometimes corroding quality. Is it not a daily Observation, that many Persons of the best Quality laboring under a Consumption, whose Fortunes do enable them to be assisted by a *Chorus* of Physicians, performing their utmost endeavours, by prescribing all the noted Pectorals, maugre all their useless efforts, are forced to yield to the
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fury of their Distempers? However, take notice that I do not offer this sort of discourse, to discourage any Consumptive from applying to a Physitian; for considering, one so Diseased is under a Sentence of death, and to continue so, is to dye every Day, every Week and every Month, which is more terrible than a Pestilential Fever, whereof a Man dieth but once, the advising with a Physician, who shall give you hopes every Day, Week and Month, of recovering of you, will wholly abate your terror, until the very fatal Moment you leave him, and he leaves you.

4. *St. Johns-wort* in its Flowers, under the notion that it's one of the chiefest Tranmatics, having by infusion in Water, Mead, or Small-Ale, and a little boiling towards the latter end, impregnated either of these Liquors with its Virtues, and with Sugar, or rather Honey seduc'd into a Syrup, is by many approved very soveraign to Consumptives; the truth whereof can be best attested, by several that have used it several Weeks to no purpose.

5. Among all the decanted Remedies against Consumptions, I find Physicians have a great respect for *Sugar of Roses*, and for being a kin to that, for *Conserve of Roses*; of which former, it is the report of *Avicem*, that a certain Woman, who was in a desperate Consumption, was not only recover'd by it, but made fat thereby; add hereunto a concurring testimony of *Mesues*, that many have been cured by it of Consumptions, that being no less recommended to them than the latter, viz. *Conserve*

serve of Roses by *Montanus*, *Valleriola*, and *Forestus*, who pretend abundance to have been cured by using vast quantities of it ; and *Riverius* tells you likewise, that he knew an Apothecary, that was cur'd of a Consumption, only by almost continually eating *Sugar of Roses*. On the other hand I am well assur'd, that most practising Physicians, if they are pleas'd to speak the Truth, can tell you, they have known hundreds of Consumptives, that have used it in gross quantities, without the least benefit ; as for my own particular, I am so far from believing, that any Consumptive, to whom at any time I have advis'd it, upon the credit of the forementioned Authors, have receiv'd any advantage, that they rather were render'd much worse by it : And my Opinion further is, scarce any thing is more unwholsom than Sugar, whose greatest use is to please the Palates of Women and Children, and to preserve Fruits and Herbs from corrupting. It cannot be denied, but that eating much Sugar destroys the Appetite, by raising fermentations and ebullitions, which extreamly annoy Digestion ; sometimes causes loosenesses, Fevers, ill habits of Body, &c. and is no ways Pectoral.

6. Of all Sweets, nothing is more Pectoral than *English Liquorish*, and its Juice ; and if it be true, that most Countries afford a native Remedy for Endemick Diseases, they are subject to breed, *Liquorish* may very well be accounted as such in Coughs, and those Diseases of the Breast.

7. We

7. We are then to consider the Sugar in the Conserve, and Sugar of Roses, to be intended only as a preserver to the Flowers, and their Juice; and therefore the principal Virtue must reside in the Juice; and how far that is Pectoral, or absterfive to the Ulcers in the Lungs, I cannot well apprehend, especially if it be said to be drying, binding, stopping, restraining, and consolidating, which most certainly are qualifications contrary to smoothing or absterging; for what is binding and rough, must cement, thicken, detain, bind and fasten the putrid matter in the Lungs, and entirely hinder and stop up the Expectoration, either of purulent matter, or putrid slime. So that I cannot conceive those Authors recommended those Rosie Remedies against Ulcerous Consumptions, but only against such as they supposed to be occasioned by a Catarrh from the Brain of thin salin Rheum upon the Lungs, which the drying and constrictive quality of the Roses might thicken, and by straightning the passages, put a stop to the Catarrh. That humours falling upon the Lungs do cause a Cough, cannot be apprehended; for being without sense, and having no Nerves disseminated through them, are not capable of being stimulated into a Cough; so that what ever is conceiv'd to occasion a Cough, must be something annoying and stimulating of the *Bronchia*, or Lung-pipes. Neither is it probable, there can be any Catarrh fall from the Brain, that being shut up as close as a Box by its Membranes,

and

and bones of the *Cranium*. Wherefore those Rheums can only be thought to drip out of the Glandules of the Throat, and *Aspera Arteria*, upon which those astringent Medicines do seem to have an Influence.

9. Certain it is, that such saline Rheumatick Constitutions are very subject to be extremely emaciated, against which its no wonder, if a Diet of Asses, or other Wheyish Milk, together with their *Hordeata*, and *Amygdalata*, Snail waters, Decoction of Snails, Lobsters, and yellow Saunders, proved such auxiliary Remedies; though I can never believe these *Hordeata*, *Amygdalata*, Waters, or Decoctions of Earth Worms, Snails, Claws of Lobsters, (whereby as *Cardan* doth write, he hath cured many desperate Consumptions, to whom being more an *Italian* Romantick Astrologer, than a Physician, little credit can be given.) Syrup of Comfry, of Milfoil, Bugle, and the like, they being all thickners, ever cured the least Ulcer in the Lungs.

10. Much less can I believe, that ever *Eraftus*, *Fracastorius*, and other *Italian* subtle fourbs ever cur'd so many Consumptives (as they pretend more out of a decoy to allure Patients, than a real Truth) with a Decoction of *Guaiacum*, who probably were macerated by a Pocky Consumption, which is so Epidemick among them, and no less endemick, being the place of its Nativity.

11. Some are so void of Sense, to approve of Spirits of Sulphur, or Vitriol, given in four
or

or five drops, in a small Glafs full of Plantain or Rose-water.

12. The Narcotick Thickning and Emplastick Powder of *Hali Abbas*, consisting of the Seeds of white Poppy, Cucumber, Melon, Citrul, Quince, Gourd, Porcelane, and Mallows, Gum-arabick, Tragant, Starch, burnt Ivory, Juice of Liquorish, Penid Sugar, is a meer heap of Rubbish, by which *Velasco de Taranta* and *Forestus* do each affirm, to have cured a single Patient of a proper Consumption; but ought not to be credited, that probably being only an Emaciation from such a Catarrh of a saline Rheum, as is before mentioned; notwithstanding this Powder is still in great esteem among many Physitians, who never yet observ'd their Patients receiv'd any great benefit by it.

13. An *Elixir Proprietatis* tartarised, and so prepared, as to be very little bitter, and not laxative, used in a Decoction of Mallows or marsh Mallows in Whey, Mead, or very small Ale, is a Medicine far more commendable than any yet propos'd. But the most proper Remedy I could hitherto yet discover, is a subtil penetrating Balsamic Tincture, taken in a true pectoral Decoction for a month, or six weeks.

14. As for *Asses-Milk*, it is rather a medicinal Diet, than a proper Remedy; and, as I said before, by diluting and nourishing is helpful to saline emaciated Bodies, and to ulcerous Consumptives also, though if it ever singly cured one such, it hath fail'd a thousand times in others.

15. *Sub-*

15. *Sulphur*, though indued with an extraordinary Virtue against all internal and external Ulcers, is not to be understood as such, being exhibited in substance, whether in Flowers or otherwise, but ought to be dissolved and open'd by a proper *Menstruum*.

16. Before I conclude this Chapter, I can scarce pass by an Observation upon some deceitful Empiricks, who after Patients have Labour'd a long time under a proper Consumption, and a tedious fruitless cure of Physicians, have found a way to let themselves in by a specious Promise, accompanied with a large Declaration of bombast Words, that they shall be Cur'd in 6 or 8 Days, by only administering some common pectoral Julep or Apozem, proportionably enforc'd with *Diacodium*, or *Laudanum Liquidum*, by which, on a sudden procuring rest, abating the Cough by suppressing Expectoration, and through those Narcoticks putting a stop to the violent motion of the Animal Spirits, (into which they are irritated by the pungent purulent, or putrid slimy matter adhering to the *Bronchia*, or sides of the *Aspera Arteria* ; for according to what I have observed before, the Animal Spirits are the sole causes of all motion in the Humors) the Patient hath seemingly been wonderfully recover'd, and felt himself at a great deal of ease, though in effect, this way of proceeding did considerably hasten his Death, (by locking up the matter) which though happening so suddenly, the Empirick notwithstanding, finds a way to get great reputation by

by it, only by telling the standers by, that they may plainly observe by the great Benefit the Patient received in so little time before his death, that had he been called sooner, in all probability, as they may judge themselves, he might have cured him. Among the rest of those Quacks, I knew one, that by many was called the *Consumption-Doctor*, who did confess to me, that his usual Medicine was what follows. He took of *Penny-royal-water* and *Scabious-water*, of each half a pint, therein he dissolved of *Oxymel Simplex* (and sometimes *Oxymel scilliticum*) four Ounces, and as much of *Diacodium*, which made a thick Julep, or a thin Syrup; hereof he would cause the Patient to take four or five Spoonfuls three or four times in a day. This was the same Person, and the same Medicine, by which he pretended to have Cured one Captain O Brian of a Consumption, which at that time made a great noise, and was taken notice of by his Majesty King *Charles*, as the Treatise, which was written upon it, mentions; though at the same time, you are not to conceive this Patient to be otherwise troubled, then with a long chronical Cough, occasioned by Debauches, being without an hectic Fever, nor having his Lungs toucht in any sort, of which, and his Leanness, he was rather recovered by the continuance of a Milk-Diet, and his detainure from Brandy, and other strong Liquors, which had caused this Distemper, though the giving seasonable Rest to his Animal Spirits by the said Narco-

tic did also in some measure contribute to it.

17. Air being the life of the Lungs, a Consumption cannot be hoped to be protracted, or palliated, much less cured, without exchanging from a worse to a better, which is most agreeable in a dry, gravelly, stony or sandy Soil; not low, because subject to damps, nor high and mountainous, because exposed to sharp Winds, that are more offensive to the Lungs than Damps, Vapours or Fogs; neither can the Air of any place situate Westward of any great River, Bog, Marsh, Pond, or Moat, be healthful, because the Damps, Vapours or Fogs, that are raised by a Setting-Sun, continue all night, and are not dissipated before the Sun-rising the next day.

18. I am fully convinced, that Consumptions in youthful Bodies, strong before their Illness, not being very much depraved in their Bowels by a foul ill habit of Blood, and other Juices (cacochymia) are curable, if undertaken six Weeks, or a month, at least, before their expected end, and opposed by proper Remedies given frequently, and in large Doses; for I have oft observed, that many Medicines have failed in their expected effects by being under-dosed.

19. As for Issues made in the Neck, or Arms, they can bring no relief, in respect of cleansing the Ulcer in the Lungs, or correcting of the putrid Slyme, neither can External Fumigations signify much.

C H A P. X.

Of continual, putrid and malignant Fevers.

1. **L**onger Experience hath induced me to recede from my former Opinions in continual putrid, and malignant, I may say, in all sorts of Fevers, where the Blood tending to a dissolution of the mixture (I ought not to say subversion of the *Crafsis*, or temperament, being less intelligible) of its constituent parts, namely of its most subtil parts, which are the Animal Spirits from the less subtil, and grosser, or of its sulphurous from the mercurial, and saline parts, may properly be termed Putrefaction, which is not necessary, or constantly observed, to be attended with a stink, as appears in a Gangrene of any part of the Body, that is seldom or never accompanied with a stink; though a Corruption, *sphacelus*, or Mortification, always is. By this separation the most subtil parts, or Animal Spirits running together, and being accumulated in greater heaps, do move much more impetuously, whereby the said mixture is more and more dissolved every minute. By this acceleration of Motion the natural Heat (whereof Local motion is the sole cause, as appears by attrition, or rubbing any thing for a long time together causes a Heat; or by the quick and

violent motion of Spirits of Vitriol, being af-
fused upon Steel, raising a great heat, is
augmented into a greater and preternatural
heat, so that the preternatural heat follow-
ing the dissolution of the mixture, cannot be
thought to be the cause (which must pre-
cede the effect) but a consequent Symptom,
and effect of a putrid Fever, whose Essence
therefore cannot be said to consist in a pre-
ternatural Heat, or can it so be defined.
Moreover, there are some Fevers, where-
in no preternatural Heat, quick Pulse, or
high-colour'd Urin is perceived, as appears
in many malignant Fevers, where the mix-
ture of the Blood is dissolved by a sudden
extinguishing, or mortifying the Animal Spi-
rits by venomous Particles commonly admit-
ted from without, or sometimes bred within
the Body, which confirms, that a Fever is not
a preternatural Heat first kindled in the Heart,
whereas its oft kindled in other parts : As
for Instance, when an Inflammation of any
Bowel, as Lungs, Liver, &c. or where any
great pain is raised, there the Heat is first
kindled, and thence communicated to the
Heart, and all the parts of the Body : That
there is such a dissolution in the Blood, is e-
vident by the Blood, that is drawn off by
bleeding in putrid Fevers, the parts being
plainly separated one from the other. So
that advising all the Coolers you can ima-
gine, be it Snow-water, Frog-spawn-water,
the coldest Spring-water, Whey, lowr Butter-
Milk; or Juleps made of Succory, Edive,
Water.

Water-lilly, or any other Waters, though inforced with Spirit of Vitriol, Sulphur, Nitre, or Salt, and a Solution of *Sal prunellæ*, they avail so little in Fevers, that they are generally found to increase them in all the Symptoms, as the preternatural Heat, high and quick Pulse, deep-colour'd Urin, and the rest are sensibly raised to a much higher pitch. Neither doth Bleeding in the least contribute to the abatement of a Fever by cooling *per se*, but by some other way *per accidens*, as I shall endeavour to explain hereafter. That Physicians have most of 'em, if not all, wholly abandoned prescribing such sort of cooling Juleps, as being rather detrimental, and content themselves with advising small clear Posset, thin Gruel, &c. is an Argument, that putrid Fevers are not preternatural heats, nor are they not primarily caus'd by them.

2. That the Circulation of the Blood in putrid Fevers is too quick, and the Blood too much rarefied, by the too quick motion of the Animal Spirits, is very apparent, and therefore lessening the Blood by bleeding, must also lessen the Circular motion, and diminish the Animal Spirits; which being reduced to a moderate measure, as may be done by one bleeding or two, is as much as can be expected from that remedy; the Spirits being thereby render'd more free, and the Vessels more Capacious, are put into a State of performing their Office with more ease, in throwing off heterogeneous, and very

offensive particles, that are got into the Blood, either from without, or bred in the Body. But should you proceed to a Third, Fourth, Fifth, Sixth, and Seventh Bleeding, you will draw off so many Animal Spirits, that the remainder must be insufficient to perform their aforesaid Office, wherein the cure of a Fever doth consist; and should you tap off all, or most part of the Blood in the Body, as I fear too many do, and have done out of Ignorance or Stubbornness, the Fever would and must still continue proportionably in the same Vigour and Degree; so that this way of proceeding, must sooner kill the Patient than the Fever. As for Malignant Fevers, the most Sanguinary Physician will scarce Adventure beyond a single bleeding, which the more judicious think to be one too many.

3. Glysters, gentle purgatives, and Laxatives, also mild Vomits, used sometimes in the beginning are not look'd upon a Remedies *per se*, and directly opposite to Fevers, but only helpful *per accidens*, in removing excrementitious Humors, that otherwise might annoy the Spirits, and deteriorate the Fever: Neither can E-pispastick or Blistering Plasters be thought to be otherwise advantageous, than by stimulating the Animal Spirits, (upon which as I intimated formerly, they seem to Operate peculiarly) to throw off those heterogeneous and febril particles; for I cannot conceive, any are so wanting of Judgment, as to think, that the cause of the putrid, or Malignant Fever is in the Serum, whereof part is con-

tain'd

tain'd in those Bladders or blisters, the *Cantharides* have occasioned.

4. It remains then, that the whole Stress in curing continual, putrid, and Malignant Fevers, is by most of our modern Physicians, laid upon such Compounds, as are call'd Cordial and Alexipharmacal Waters, Powders, and Electuaries, also some Chymical Preparations, as *Antimonium*, *Diaphoreticum*, *Bezoaricum*, *Minerale*, *Spiritus cornu cervi*, *Spiritus fuliginis*, &c.

5. The chief of those Cordial Alexipharmacal Waters now most in use, are *Aqua Theriacalis*, *Aqua Protheriacalis*, (perhaps the better of the two, as consisting of fewer Ingredients,) *Aqua Epidemica*, &c. The Electuaries are *Theriaca Andromachi* (which is accounted more temperate than *Mithridate*.) *Theriaca Londinensis*, and *Diascordium*. The compound alexipharmacal Pouders are usually compiled out of some testaceous Pouders, as *pulvis echelii cancrorum compositus*, and others of Crabs-eyes and Claws, Perl, Oriental Bezoar, burnt Harts-horn, and sometimes mixt with *Radix Carlina*, *Contrajerva*, *Serpentaria virginiana* (which are the chief) *Dictamnium Creticum*, *Angelica*, &c. By these, and the like, as the Goastone, *pulvis Pannonicus ruber*, its supposed the Heart is much strengthened, and the Animal Spirits encreased, and propoked to throw out the *materia febrilis* by sweat ; so that they do esteem Diaphoretics to be the only true and adequate Remedies, against all continual Fevers, as the Physicians of the Southern parts do only acknowledge Bleedings.

5. We

5. We are to observe, that the Animal Spirits are continually employed, from the beginning of a continual Fever to the declination, in subduing the *Materia febrilis*, which is commonly termed a Digestion, or Concoction; at the Declination they apply themselves to the separation, and expulsion of the said febril matter, which in these colder Climates is more frequently by Sweat and Urin, and sometimes by Stool, Hemorrhage, Imposthumations, or some few otherways.

6. If then the chief scope is to throw off and expel the febril matter by sweat, three things ought to be considered. 1. Whether Diaphoretics ought to be used before the Declination of a Fever, at which time only they appear to be helpful in assisting Nature to throw off; for it must be own'd by all experienced Practicers, that the *causa febrilis*, be its vitious humours, heterogeneous particles, or what other offensive matter they are please to allow, must be first subdued, or digested, and separated, before it can be expelled by Sweat; and therefore should you exhibite the largest Doses of Diaphoretics, that Nature can possibly bear, and second them by loading the Patient with a number of Bed-cloaths, he will scarcely be brought to sweating; and if peradventure he should happen to be forced into a Sweat in the beginning, augment, or state of the Fever, it must be to a very great detriment, by diverting the Spirits from their necessary task, and squeezing the *serum* from the Humours, where-

by

by they are thickned and hardned, which ought rather to be diluted at those Seasons. Moreover by putting so great a force upon the Spirits, they must necessarily be much divided, dissipated and inflamed. Secondly, whether Sudorificks given in moderate Doses, so as to be insufficient to provoke Sweat, do not assist the Spirits by increasing them, (I mean, such as contain some vinous Spirits, as Epidemic, as Treacle-water) and putting them into a gentle agitation, whereby the febril matter may be subdued, or digested. *Vox Medicorum* doth proclaim they do, and therefore they are prescribed by them from the beginning to the ending of Fevers, in no greater measures, than what nature seems to require. For my own particular, I can scarce believe, that those Spirits are, or can be render'd homogeneous to the Animal Spirits (whatever they are when a Man is in health) being now under a great disorder, and disturbance; and as for the other subtil particles, that are supposed to be in the Ingredients of the said Alexipharmacal-waters; how far they are conducing in subduing the febril matter, can best be prov'd by the success, ten dying under the use of them, to one that recovers, whose Recovery may rather be attributed to the strength of Nature, a due *regimen* in his Diet, and doing him no hurt by improper Remedies. Thirdly, supposing fictitiously, that Diaphoreticks were proper, the uncertainty of their Operation would often occasion a failure of
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the effect that is expected from them. *Purgatives* and *Vomitories* seldom or never fail in their operations, if justly dosed: But *Sudorifics* and *Diuretics* very oft, though administred in great quantities. Many quarters of Plague-water have been drunk for pleasure at one time by several that are in health, without the least sweat following upon it: And as many diuretic Juleps have been swallowed by Nephritics, who have not made a drop of Urin the more after them.

7. Wherefore I do much suspect, that there is scarce any Remedy used, that may be truly termed an Antifebril; though there are a great many that are in common use, and yet not commonly known, or acknowledged to be such, which, if well Dosed, and oft exhibited in proper Seasons, may evidently and sensibly be discovered by any heedful Physician, to subdue the febril matter, though but slowly, and therefore ought to be began to be given very early, and continued. Besides these, there are other Medicines, which in four and twenty hours do abate all the common Symptoms in a continual and malignant Fever, though even these, if applied too late, the Spirits being then almost wholly subdued, and the febril matter increased, and render'd indigestible, may fail in their performances. As for the *Peruvian Bark*, I have several times attentively observed, that the continual Fever being under very promising circumstances, hath upon the use of it changed sensibly into worse Symptoms in six or twelve

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twelve hours, so that no means afterwards could be applied capable to retrieve that Error.

8. Narcotics are seldom forgotten in this Distemper, especially where so seeming a relief is perceiv'd on a sudden, in the sudden suspension of its Symptoms, by detaining or holding fast of the Animal Spirits from Operating upon the Febril matter, that causeth these Symptoms, which soon return with a greater fury, upon the letting loose of the said Spirits, by the dissipation of the Force of the Hypnotic Medicine. This seeming alleviation doth oft encourage the Physician to a continuatd use of Dormitives, throughout the whole course of the Fever, the benefit whereof is experienced, not only to consist in a longer delay of death, but also in a more certain consequence of it. Notwithstanding this great abuse doth not remove the necessary, seasonable and seldom use of Narcotics, when and where urgent Symptoms may require them.

CHAP.

CHAP. XI.

Of the Stone.

I. **T**HAT the Urin is saturated with *Sal Armoniac*, its distillation doth plainly confirm to us, and that the *serum* of the Blood whereof the Urin doth consist must first contain the same, or else the latter could not receive it; for *nihil dare potest quod non habet*, and consequently that the whole Mass is thorowly replenish'd with it, doth also appear from the distillation of Human Blood, which yields a plain Spirit of *Sal armoniac*, little or nothing at all different from the other. That *Sal armoniac* is the most tough Salt of all others, cannot be disputed by those, that have pounded common Salt, *Sal gemma*, *nitri*, or any other Salt, in a mortar, these being the most friably and brittle, and consequently the less unfit singly to be coagulated into a Stone, whereas *Sal armoniac* being so tough and tenacious, especially being mixt with crude slimy mucous dregs, that remain after the imperfection of the Digestion in the Stomach, together with some fabulous Matter of the Blood, I do conceive may easily be coagulated together by a vitious limpid gleet dripping out of the Nerves (as I have already mention'd in one of the preceding Chapters) that are disseminated through, and are terminated in the *parenchyma*, and membranes of the Kidneys.

So that the pretending that Slime adhering to the Kidneys, or its inward membrane, is baked into a Stone by a preternatural heat of the Kidneys, like unto Clay baked in a Kill into a brick by the extream heat of a fire, seems a Jest to me, since it cannot be imagined, that any heat of that degree is ever felt by any nephritick Patient, or, if possible, could it be endured by him. Moreover their pale Complexions, pale Urin, sluggishness, infrequent Urination, or making of Water, are all indications of Coldness; add hereunto, that Chrystal is generally found, and probably bred in the Snow; Rocks, Flints, and other Stones in the Bowels of the Earth, where no degree of Heat was ever perceiv'd. Wherefore what ever extraordinary or preternatural Heat may be felt by Nephriticks about their Loins or Kidneys, is commonly caus'd by Gravel, Stone, or some other obstructing matter, occasioning pain and consequently heat.

2: In what part soever this Urinous Salt, or *Sal Armoniac* is found, (through want of being separated and expelled by the Kidneys) be it in the Gutts, Urinary-Bladder, Gall-Bladder, Liver, Spleen, Brain, Stomach, Lungs, in the fleshy part of the Tongue, and of the Kidneys themselves, also about the Joints, though as remote as the extremities of the Fingers, there Stones may be, and have been engender'd, as is attested by a multitude of Authors. Some of these parts being allow'd by most Physicians to be of a cold Tempera-
ment.

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ment, as the Brain, Guts, Bladder, &c. is a second Argument, that plainly evinces, the Stone is not engender'd efficiently by Heat, though it may sometimes very considerably conduce to it. But to say, there is a *Lithopoeitic* Faculty, or an innate calculous and fabulous constitution in the Kidneys, as is asserted by so great an Author, as *Fernelius*, seems to me very idle; as if he would infer, that none were subject to the Gravel and Stone, but such as deriv'd hereditarily a fabulous, and calculous disposition of Kidneys from their Parents: What satisfaction there is in the Word *Lithopoeitic*, I cannot well apprehend.

3. Before I recede from this subject, I ought to answer one Objection, *viz.* That there is not always mucous Matter concurring to the generation of the Stone, as appears in the Stone, that is sometimes found in the Gall-Bladder of a Man, and very oft in that of an Ox, which consisting of Gall or choler, cannot be supposed to have any Slime, Phleam, or Mucus adjoin'd to it, being for the most part found simple unmixt, and contrary to the Nature of *Mucus*, or Phleam, which is always Glutinous or Viscous; I allow the whole, and make answer, that the Stone in the Gall-Bladder is oft formed by concretion, through the separating or drying away of its thinner and moister parts; in like manner Mortar dryeth in some time into a Stony substance; as also doth *Tartarum Vitriolatum*, that's made by concretion, besides many others; on the other hand I must tell you

The Stone in the Kidnies. 95

you, I am not the first, that hath observed the Gall in the Gall-Bladder very Viscous and roapy, through the admixture of some Slime or *Mucus*; that's separated with it from the Blood, and then it will be allowed to be matter very proper for the Formation of a Stone. In the same manner a Stone in the Kidneys may be formed by concretion, without the admixture of Mucous Matter, but then the Stone becomes friable, and not very hard, and of a more reddy colour, whereas according to the proportion of Mucous matter, concurring to the formation of the Stone, it becomes hard and pale.

The Stone of the Kidneys is commonly observed to precede that in the Bladder; and any Stone, though of a very small dimension, falling from thence, through either of the Ureters into the Bladder, is conceiv'd to be the Foundation of one there, which by lying a considerable time, doth receive a daily growth from the Urinous Salt, and Slime, that descend thither. This in my opinion is not always necessary, it being possible enough for a Stone to grow in the Bladder, without having the Rudiments laid in the Kidneys; moreover it hath been observ'd, that at the same time one of the Kidneys, and the Bladder, have each contain'd a Stone.

4. To the formation of the Stone, must be concurring. 1. Depauperated or vitious animal Spirits, that are too weak to perform the separation and Expulsion of the abounding Serum of the Blood in the Kidneys. 2. A Se-

rum

rum too much Saturated with a *Sal Armoniac*, that's mixt with too much common Salt, which all edibles do contain in some proportion, and so do Urine, Beer, Whey, and other Drinks; for you are to understand, that *Sal Armoniac* is a mixt Salt, consisting of common Salt, and a Fuliginous Salt, united together, as appears by the Artificial making of *Sal Armoniac*, which is by mixing a pound of common Salt, to half a pound of Soot, and boiling them in three or four pints of fresh Urines, to the thickness of Honey, which is then to be sublimed in subliming-pots into *Sal Armoniac*. The natural Salt Armoniac is Urin of Chamels, Horses, or Oxen, concreaced or Evaporated by the hot Sands of Arabia into a Salt. 3. A Slime or *Mucus* to Cement the Salt with the 4th, which is *Sabulous Dregs* of the Blood, 5 narrow passages of the Kidneys. So that Salt, Salt-Meats, Pickles, and Spices, are chief materials for the Stone. 6. A Vitious gleet dripping from the Nephritic Nerves, Coagulating the materials together. This is the short Theory I do propose to my self, of the generation of the Stone in the Kidneys, which is suggested to me by practical experience, though I could wish, that among so great a number of very ingenious Physicians we have here in England, (who are as capable, as any in the whole Universe, though not so industrious) some would take the pains, to detect a more probable Theory of the Stone, and other Distempers, which would
certainly

certainly prove a great Advancement to the Art of Physick, and no less Benefit to miserable Patients. However, as defective and Hypothetical only this Theory may be, it conducts me much more successfully in the Practick against the Stone, and other Diseases of the Kidneys, than the common Doctrine. I do own, that this and all the other preceding Theoretick Notions might be render'd much plainer, by branching their Illustrations into so many particular Volumes; but my invincible Aversion to all manner of Prolixity, together with my weak Capacity of rendring them any more than scarcely probable, or other than meerly supposititious, doth entirely discourage me from any such Attempt.

The Practical Part of the Stone consists in these Particulars; 1. In the Means to prevent the Growing of it. 2. In the Cure of the Stone. 3. In the Removing a Fit, or Paroxysm of Pains, occasion'd by the Stone. 4. In the preventing the Return of a Paroxysm of the Stone, which may be term'd a Palliative Cure.

1. Those that live Sedentary Lives, and use little or no Exercise, as most Students; and Debauchees in sharp Wines, and very new, or stale Strong Beer, are very subject, and properly dispos'd to breed the Stone; but beyond all, those that eat much Salt with their Meat, or feed much upon Flesh or Fish Salted, Smoak'd, or Pickl'd. Wherefore interposing moderate Exercise between their Studies, and abstaining from their grave
H Thoughts;

Thoughts, by intermixing Chearfulness and sober Mirth, to alleviate the Animal Spirits, which are the chief Agents of Health, and, being indispos'd, or vitiated, of Diseases. This is one Way to prevent the Stone in the former; And exchanging sharp Wines into milder, and diluted with a light thin Spring-Water, and using them with a *quantum sufficit*, and a total Abstinence from Stale Beer, substituted by Small Ale, will produce the like Effect in the latter. To drink Wine at Meals, as it lays a Foundation for the Stone, so using Small Drink in its stead prevents it: And in my Opinion, pure Wine ought not to be drunk, according to the Rules of Health, before the Chylification is finish'd, and the Distribution at hand, unto which it may be very assistent. A Fish-Diet moisten'd with too much sharp Wine, and a Bread and Cheese-Diet, seldom fail of administering sufficient Matter for the Stone. In short, Keeping the Stomach clean, in the manner as hath been before describ'd, is the chiefest Way and Means to prevent breeding the Stone.

2. The Cure of this Disease is commonly attempted by Bleeding in the Arm (though some judge it more advantageous in the Foot) in Bodies, that are moderately replete, to make room in the Vessels, which the subsequent Laxatives and Purgatives will necessarily require, as working by Fermentation, that will occasion a Rarefaction of the Humours, and consequently a Distension of the Vessels, which otherwise might cause some Local Disturbance

disturbance of the Stone, or occasion a Paroxysm of Nephritick Pains. Among the Laxatives, *Cassia Fistularis* newly drawn over the Steem of a Decoction, made of Emollient or Diuretick Vegetables, is made choice of as a sacred Remedy, either by it self, or mix'd with Rhubarb and Cream of Tartar, or *Diasenna*; which is oft suspected, because the *Scammony*, that is an Ingredient in it, is accounted too rough, as causing too high a Fermentation, or Ebullition; or *Pulvis Senæ comp. maj.* or *Pulvis Sen. comp. min.* This is judg'd necessary to be repeated once or twice, at convenient Intervals; which, as I have try'd more than once, I have always found, not to reach the Morbifick Matter, and therefore am oblig'd to make use of such Additions, that should penetrate without any Hazard of putting the Spirits upon a Ruffle. This being premised, the Saxifragets, or Stone-breakers, are to be introduc'd, with this Election and Preference, That those, which have an extraordinary Character stamp'd upon them by great Authors, or Physicians, ought only to be recited; for, should they all be enumerated here, to which the Faculty of Stone-breaking is attributed, a Quire of Paper would be insufficient to contain them, there being no Disease in the whole Body of Man, against which so many Simple and Compound Remedies (in all manner of Galenical and Chymical Forms) of Vegetables, Minerals, and Animals are recommended, as against the Stone; for I do believe I never met with a Physician, Apothecary, Sur-

geon, Empirick, Midwife, or any Old Woman, that had not an infallible Remedy against the Stone and Gravel.

But before I make mention of any of these Stone-Grinders, it will not be amiss to enquire by what Quality, Vertue, or Means it is expected by Phylicians, they should perform this great Work of Breaking the Stone in the Kidneys and Bladder. Some endeavour to effect it by Medicines, that have a Corroding Quality, by which insinuating into the Pores of the Stone, tear all asunder, and dissolve it, in like manner as *Aqua fortis* dissolves Silver, Copper, and Tin; *Aqua regia* Gold; and Juice of Limons, and distill'd Vinegar Crabs-Eyes, Pearl, Coral, &c. To this purpose, for Corroding and Dissolving the Stone, are recommended *Spirit of Vitriol*, *Sulphur*, *Salt*, *Nitre*, and *Juice of Limons*. I have experienc'd most of these in the Cure of the Stone, and ever observ'd, that within less than an Hour, they would certainly put the Patient into an horrid Fit of the Stone-Cholick, besides the Pain in the Back; against which, an Emollient Laxative Clyster, with the Exhibition of a gentle Narcotick at the end of its Operation, gave present Relief; and glad I was to come off so. That a few Drops of any of those recited Spirits, well diluted with a Parsley or Fennil-water, and sweeten'd with Syrup of the five Opening Roots, being thus obtus'd, and afterwards broke in their Virtues, by passing the Stomach and other Parts, and carrying thence some slimy Particles to blunt them

more,

more, should at last, upon their Arrival to the Kidneys, be endu'd with a Force sufficient to crack a hard Stone, is very wonderful. But to clear the Point, pour Spirits of Vitriol upon Steel, as it is directed in the Preparation of *Vitriolum Martis*, these readily entering the Pores of the Steel, whose Figures are adapted to receive them, move very quick and impetuously, piercing through the whole Body of the Steel in a very few Minutes, whereby not only a very great Heat and high Ebullition are occasion'd, but the Sulphurous Particles, that ty'd the Salin together into a Body, are totally expell'd; as you may perceive by the great Stink attending of them in their Evaporation; and the Remainder is turn'd into its First Principle of Vitriol. In like manner the Spirits of Vinegar, or of Juice of Limons, piercing into the adapted Pores of Bezoar-stone, Pearl, Coral, Crabs-Eyes, Egg-shells, Oyster and Mussel-shells, Crabs-Claws, and the like, by the quick and violent Motion of their most subtil pointed Particles, cause an Heat and Ebullition, and chase out the Sulphurous connecting Particles; whereby nothing is left in the Vinegar but a Tartar, (*Limus*, or *Fæx*,) and if wash'd, may be call'd a *Calx* extinct, though honour'd by Chymists with the Name of *Magistery*; that is, after the Precipitation with Oil of Tartar, and the sweetning of it with several Lotions of warm Water; which in reality, is no other than a *Terra damnata*; and among those recited, I take the Bezoar-stone to contain the finest

Earth; and next to that the Perl. As for the rest, I look upon them all as equal.

2. Now if you can suppose the Pores of a Nephritic Stone in the Body, to be adapted in Figures, answerable to receive the pointed Particles of the Spirits of Vitriol, Salt, Nitre, Tartar, Vinegar, or Limons, you may reasonably believe, there is a Virtue and possibility in these Acids, of dissolving the Stone in the Kidneys or Bladder, notwithstanding that they are not taken in so great a quantity, as almost to corrode, and that they do not arrive in their full force to those remote Places; yet their frequent Repetitions, and long continuance of them, under a milder Virtue, will answer their disproportionable dosing, and accomplish the same effect: So that if this supposition were true, as it is most certainly false and erroneous, you are not to apprehend, that those Acid Stone-breakers were to perform that Work, in the time almost that you may crack an Apricock Stone, as most of these Medicine-mongers and Empiricks pretend to do, in twice or three times taking. But to subvert your Supposition, and consequently to divert you from losing your labour in the use of Acids; I need only to alledge to you, that they are in no wise shaped in the figures and dimensions of their Particles, proportionable or adapted to enter the Pores of a Stone bred in the Kidnies or Bladder, as you may easily make trial, by pouring of Spirits of Vinegar, (I mean, Vinegar twice or thrice distilled)

Juice

Juice of Limons, or simple water acuated with such a proportion of Spirit of Nitre, Salt, or Vitriol, as to bring it to such a degree of sharpness, acidity, or virtue, as Spirit of Vinegar, or Juice of Limon is; for above that degree, no Acid can be taken into the Body, without corroding the Stomach) upon an indifferent hard Stone, taken out of the Bladder or Kidnies, which being inclosed in a Matrafs with its blind Head, and placed in a warm Sand Bath for Twenty Weeks together, at the expiration of which, you may take out the Stone, so far from being pierced by the Acids, that its grown much harder than it was before. But what is more, should you pour the strongest *Aqua Fortis*, or *Regia*, or Spirit of Vitriol not diluted upon it, and let it stand as long as you please, the Stone will come out harder than it was put in. As Gold and Silver cannot well be reduced, or dissolved into a *Calx* by ignition, but by amalgamation, and immerfive (as the Chymists term it) Calcination by corrosive Acids; so on the contrary, the Stone that's bred in the Bladder and Kidnies, cannot readily be dissolv'd into a *Calx*, by an immerfive Calcination, but by Ignition. * *Red Lot*

3. That all Acids (*Quatenus* Acids, and *per se*) are Enemies to the Nerves, nervous Parts, (as Membranes, Tendons. &c.) and to the Animal Spirits, common experience doth attest; whence it is, that most Men, upon only tasting of a very sour thing, being Potable or edible, are apt to make sour Faces, and to

* Because the Sulphur, that tyeth the constituent parts of the Stone together, can only be consumed or destroyed by fire, where-as no acid will, or can attempt upon Sulphur.

shiver, or to undergo small Tremblings all over, (which are small concussions of the Nerves, Tendons, and circumvestient Membranes of the Body) by pricking of the Membranes; and though this Pricking in tasting of any very sour thing, is only perceiv'd by the Nerves and Membranes of the Mouth, it is nevertheless felt all over by the continuity and contiguity of all the Nerves, nervous Parts, and Membranes of the Body, like unto two, or more unison Fiddle strings, whereof one being touch'd, causeth the same sound in all the others; or like unto a Cord that's extended, which when smartly struck at one end, makes the whole Cord shake as far as the other end; whence I do infer, that what ever expulsion, whether by Vomiting, Stool, or Urine, (and sometimes *per accidens* sweat) is occasion'd by the force of Acids, is by pricking, stimulating, or irritating the Nerves, or nervous parts, by their rigid Pointed Particles, and a faculty, (which all Acids possess, contrary to all fuliginous and armoniac Salts) of precipitating of them, and consequently throwing of them down the Ureters; and therefore I doubt not, but that in some kinds of suppression of Urine occasion'd by the Stone, Gravel, *Mucus*, Crumbs of Blood, and at some seasons, Acid Medicines may be of great use, among which, I do in my opinion prefer this following.

*R. Aceti Vini albi Gallici destillati, (vel si
 maris, succi Limenym, vel citri, cujus po-
 terioris*

*sterioris usus præstat) ʒj. Ol. amygdal. dulc.
rec. extract. ʒjß. probe & diutine cum Sacchar.
candi vel Sacchari Alibæa. ʒß. triti. vin.
alb. gall. ʒiiij. M.*

This proves very diuretick in many, and that by stimulation, as I have said before. But its observed of Juice of Limons, that if frequently used, its apt to cause a Thrush in the stomach, by its too sharp, or rather somewhat corroding quality, occasioning sometimes Vomiting, or a violent Looseness, for which reason the Juice of Citron is preferred, consisting of an acid not so acute, and yet not less diuretic. However, White-wine Vinegar distill'd is experienced to excel either of them in the diuretic Faculty, and many others, as being much more penetrating, and consisting of Particles more subtil and Volatil. Though Vinegar is vulgarly reputed a potent restraining, yet it cannot deserve that denomination so much as Spirit of Salt, Nitre, Juice of Limons, or the acid of Tamarinds; and to speak the truth, it cannot properly be term'd Adstringent, which is a quality that's binding, purring, (drawing together like a Purse) and contracting, proceeding from austere Particles, such as are perceived in Allom, Juice of Slows, and the like; but nothing resembling that, can be discover'd in Vinegar, no more than in Juice of Limons, or Spirit of Salt. True it is, that all Acids cause an Asperity or Roughness by their acute Particles, pricking the Nerves

Nerves and Membranes, that are nervous expansions, which by a sort of resistance rise up into those minute Points, * thereby endeavouring rather to expel and throw out ; whereas the others by their Austerity, though occasioning a Roughness, yet it is such, as doth detain, and bind in whatever they contain: What is in Vinegar, but an Acid Spirit, united to an Acid Tartar, melted as it were *per deliquium* into a moisture or Liquor? Vinegar is so far from binding, that it renders any thing, to which its united, more piercing, expulsive, and solutive also, as appears in *Sal Tartari Sennerti*. *Colocynthis* steep'd in Vinegar, is render'd much more purgative, than when macerated in Brandy or Wine. Three Grains of *Laudanum Opiatum* taken to cause Sleep, and drinking upon it a Draught of any Julep, that contains an Ounce of distill'd Vinegar, or only as much *Oxymel Simplex*, shall occasion a deeper Sleep, than if ten or twelve Grains of *Laudanum* had been swallow'd, whereout probably some would never awake again. Others upon drinking of sour Beer, (being of the same nature as Vinegar) are immediately put into Gripes and Looseness. However I will not be positive in this, or scarce in any thing else; but to me, the Adstringent quality in Vinegar seems a vulgar Error of some Ages.

That Acids (excepting those that are meerly Austere) are the chief and most proper Medicines (I will not say certain, for they don't prove always so) for Expulsion, and pro-

promoting or irritating the *Expultrix* Faculty efficiently in the Animal Spirits, and Instrumentally in the Nerves and Membranes, may be Instanc'd in Vinegar, which in a greater quantity provokes Vomiting, in a lesser, Stools and Urin, and Sweat in those that are disposed. It is certain, that *Prophylactic* Waters made by Infusion, and not distillation, being commonly well impregnated with Vinegar, and *Acetum theriacale* are incomparatively more ready and potent in half the proportion, in promoting Sweat, (which also is by expulsion) than Treacle-water, (wherein is contain'd only the Phlegm of some Acids, the heavier and stronger part not coming over the Helm in distillation) *Aqua Epidemica*, or *Protheriacalis*. One Dram of *Virginian serpentry*, being macerated in Vinegar, shall raise a quicker and more copious Sweat, than three Drams infus'd in Wine or Brandy. Cream of Tartar, and Tamarinds, by their pungent Acidity, move the *Expultrix* Faculty of the Guts to Stools. Juice of Limons, Citrons, Oranges, Spirit of Tartar, Nitre and Salt, prompt the Kidnies to expel Urin, &c.

4. *Spiritus tartari*, *Nitrum tartarizatum*, and *Tartarum Vitriolatum*, are by most that have made tryal of them, accounted the most powerful of Diuretics. But there being so offensive an empyreumatic stink in the Spirit of Tartar, proceeding from a remaining Admixture of some lixivial Earthy Particles, imperceptible to the Eye, whereto the *Empyreum* is almost inseparably adherent, causeth

its

its use to be much neglected, which however may be removed, by mixing the Spirit with fine wheaten Flower into a Paste, and that equally mix'd with the *Caput mortuum* of Vitriol, and so drawn off twice or thrice in a Glass retort; or mixing the Spirit of Tartar with *Golchotar*, i. e. *Calchantum rubefactum*, and drawing it over once or twice in the same manner; wherein you need not to fear, that any Vitriolic Spirit will mix with it, in regard that the degree of heat, that will be sufficient to raise the Spirit of Tartar, is not by much intense enough, to force out the Spirit of Vitriol. After all, a pure *Acetum destillatum* is not much inferior to it.

5. By what means those Magisteries of Crabs-Eyes, of Mussel-shells, Egg or Oyster-shells, operate those pretended effects of forcing down Urin, and breaking the Stone, is my next business to enquire. It is commonly concluded, that whatever drives down Urin forcibly, doth break the Stone by oft dripping upon it, like the dropping of a Gutter falling oft upon a Stone under it, doth by length of time make a hole into it. *Gutta cavat Lapidem non vi, sed saepe cadendo*. It is then inferr'd, that those recited Magisteries are potent Diuretics, (which my little experience doth wholly contradict,) but whether they do their work by cutting, hammering, or dissolving the Stone *tota substantia*, ought to be consider'd. It cannot be pretended, that in those Magisteries, and particularly in that of Crabs-Eyes, there is any thing

thing besides a fine Earth, the acid Particles of the Vinegar, having entirely driven out the sulphurous Particles of the Crabs-Eyes, and seated themselves in their rooms and Pores, which they had left; so that you are not to apprehend, that the Vinegar is thereby sweetned, because the Alcalious Particles (which in them ought not to be so call'd, for they are not such) are mortified or broken, and thereby the Liquor, wherein the acid Particles were, remains inspid; no, this is quite otherwise; for the same acid or Vinegar Particles are still in being, having only chang'd their place; for put the whole solution together, *viz.* the inspid Liquor, and impregnated fine Earth of Crabs-Eyes into a Glass retort, and being placed in a Sand Furnace, you will by distillation with a smart heat, have your Vinegar return'd to you again, not at all, or imperceptibly little impair'd in its sharpness, or lessen'd in quantity; so that this pretended *Magistery, Solution, immerfive Calcination*, or what else you are pleas'd to call it, is nothing else, but a concentration of the Spirit of Vinegar, in the entirely destroy'd Crabs-Eyes, which being wash'd off from the saline acid Particles of the Vinegar, or first being precipitated by the instillation of Oil of Tartar, and afterwards wash'd with repeated lotions of warm water, is left not worth a straw, and fit for nothing but to make a very indifferent *Fucus*, or Cosmetic, which that of Egg-shells doth by much excel. Wherefore Crabs-Eyes by Triture upon

upon a Porphir reduc'd to an Impalpable Powder, and exhibited in a convenient Vehicle, do in a Moment remove that troublesome Symptom, improperly call'd the Heart-burning, by admitting the acute Particles of the almost corroding acid Liquor (floating in the Stomach, and vellicating its Nervous Tunicks) into their minute Recesses, whence the Sulphurous Particles were so suddenly chac'd; and if upon this the Patient takes twelve or fifteen Grains of pure CrySTALLIZED Salt-Petre, (not *Sal Prunellæ*,) in a Draught of Barley or Milk-water, at a few Minutes distance, he shall perceive the Crabs-Eyes, with the contain'd corroding Particles, sensibly precipitated into the Guts.

6. CrySTALLIZED Nitre is certainly the most wonderful Salt of any, and the most active and potent Diuretick, or Piss-driver, of all the whole Catalogue. It is a Salt entirely consisting of Sulphurous Spirits or Particles, concentr'd or clos'd up in a very little Saline Matter: Its Activity and quick imperuous Motion is beyond all others, except Mercury; for no sooner can you touch your Tongue with it, but immediately its subtil piercing Particles enter the Pores of the Moisture residing in the spongy Recesses of your Tongue, and of the Spittle about it, which they divide, attenuate, expand, and dilate, or rarefie so very quick, that your Mouth seems to run over with Moisture in an Instant. This Nitre, or Crystal Mineral, being taken in a proportionable Dose, in a sufficient quantity of a suitable Vehicle,

doth

doth soon after rarefie, attenuate, and tumefie all the Humours, Liquors, Serofities, and Moistures it meets with in the Stomach, and other Bowels and Passages, whereby the thinner Parts are separated, thrust forward, squeez'd, and expell'd towards the Kidneys, and thence to the Ureters and Bladder; so that I have not yet found any thing comparable to it for a Piss-driver. That I do prefer it thus unprepared before *Sal prunellæ*, is, because by the melting and inflaming *Sulphur* upon it, a great part of the most active and penetrating Spirits, and most subtile Particles are driven out, and consequently much enfeebld. But perhaps you may reply, That their crude Particles are by the inflaming of the Sulphur expell'd, and the Nitre thereby digested; which is all fantastick. Beside this extraordinary Virtue, these Crystals Mineral have a Power so surprizing in the Thrush of the Mouth, Internal, and External Inflammations, and many other Diseases, that 'tis a great Wonder to me, it is no more taken notice of in Physick.

7. To return to the Remainder of Enquiry into the Manner and Ways, whereby these Virginal Earths of the aforesaid Testaceous Magisteries do drive down Piss; upon the strictest Search my slender Capacity can make, I do not find any thing to attribute that Faculty unto, except to little cutting pointed Sands of those Earths, that by pricking the Membranes of the Stomach, Guts, and other Parts, they stimulate them; and by Contiguity, and Continuity of Parts, stimulate all the
Mem

Membranes of the Body to expel loose, separated, and floating Serosities to the Kidneys and Ureters. That by pricking one Membrane, you do, as it were, prick all the rest, appears in the Instances above-written, of a Touch upon a Cord extended, or a Sound made upon one Unison; or by the pricking of the Membrane of the Tongue by any very sour Taste, all the Membranes of the Body seem to be affected with the same little Punctures, as appears by sudden small Shiverings all the Body over; as likewise, in another Instance of the Bladder, which oft, upon having made Water newly, the Air from without presses into it, to fill up the *Vacuum* in some measure, whose Nitrous Particles wherewith it is repleted; do prick the Membranes of the Bladder; upon which, a sudden Shivering (which is an Attempt or Endeavouring of Expelling) happens all over the Body, by the propagated Sense of pricking to all the Membranes.

8. 'Tis in this respect, that Glass being powder'd, is also recommended for a potent Diuretick, by reason of those acute cutting or pointed Particles, that are suppos'd to be in it, which pricking and stimulating (being likewise accompany'd with Weight, that contributes very much, and therefore ought to be administer'd in greater Quantities, than are usually given) the Tunics of the Stomach impel Serosities to the Kidneys in manner before express'd. Upon the same Consideration it is, that *Lapis Judaicus*, *Lapis Nephriticus*, *Lapis Spongiae*,

Spongiæ, Medlar-stones, and probably Peach and Apricot-stones, Mountain-Crystal, *Lapis Lyncis*, little Stones that are found in the Stomach and Gall-Bladder of an Ox in the Month of *March*, in the Liver of a Wild-Boar, in the Head of a Perch, and in the Throat of a Carp, and the Stones that are taken out of the Kidneys and Bladder of a Man, and indeed all other hard Stones, that being reduc'd to a Powder, do still retain some acute cutting Particles; for if any hard Substance be finely pulveriz'd, and afterwards grinded into an Alcohol, or impalpable Powder, upon a Porphir, so as all the Points of the Minute Particles are obtused, and entirely broke, it loseth all its Diuretick Virtue. Wherefore it is, that the Magistery of Crabs-Eyes, and other Testaceous Bodies are so far from being Diuretick, that they prove Emplastick, and consequently putting a stop to all manner of Expulsion. For the Reasons alledg'd I am of Opinion, that Crabs-Eyes, Coral, Bezoar, and the rest of Testaceous Bodies are destroy'd by all manner of Preparations, (whether in order to Magisteries, Tinctures, Salts, or Deliqueous Oils,) except moderate Pulverisation, which renders them more susceptible of Acid Salts, whereof the Moisture or Liquor being disrobed, now serves for Increase of Serous Matter, that is to be expell'd to the Kidneys for the Matter of Urine, or the Ambient Pores of the Body for the Matter of Sweat, whereunto the Membranes are stimulated by the Acid Spirits, wherewith the Testaceous Powders are impregnated.

9. Among the pre-cited Stones, Dogmatists pay the most Respect to the *Nephritick Stone*, and *Crystal*; which latter, when brought into a Powder, by how much it retains more hard, subtile, acuated and pointed Particles, so much the more it is adjudged to exceed Glass in a Diuretick and Saxifragous Quality, both operating in the same manner, and by the same means. As for the *Nephritick Stone*, there are such wonderful Stories recorded of it, that I am almost asham'd to offer the Recital of them; and at the same time, am surpriz'd at the unlimited superstitious Belief of Mankind: Before I proceed, I ought to give you some Description of it, that you may not be impos'd upon by a false one. The best of these Stones are brought from *Turkey*, and the *Spanish West-Indies*, which they call *Igiada*; though some slight ones are sometimes taken up in some Parts of *Bohemia*, *Spain* and *Carniola*: Others are of a very considerable Weight and Bigness. They are fine Stones to look upon, of a dark green Colour, clouded, though some are of a lighter Green; the Surface feels always greasie. 'Tis reported by some, that this *Nephritick Stone* being grinded into a fine Powder, or prepar'd probably by Calcination, or making it red-hot in a Fire, and afterwards quench'd in strong Vinegar, whereby it is easily reduc'd into a subtile Powder, and given to the quantity of a Dram and an half, in Fennil or Parsley-Water, doth in a Moment remove the violent Pains in a Fit of the Stone; and being taken three or four times,

times, doth in a wonderful manner dissolve the Stone into a Slime, Mud, Gravel, and Crumbles, as they pretend to instance in the perfect Cure of abundance of Nephriticks in Germany, where their Wines, and the common Excess in drinking of them, do in abundance of People breed Stones in the Bladder and Kidneys. They add further, That if it be given in too large a Dose, or taken too oft, it breaks so fast, that the Mud and Gravel, into which it is dissolv'd, come down so fast, that they are apt to dam and choak up the Ways, as containing too little Room to give Passage to so much Rubbidge.

10. But the Excellency of this *Lapis Nephriticus* consists more in the External Use of it, than Internal, the various Narratives whereof appear wholly incredible. Authors tell you, That being worn on the Wrist, many have been cur'd by it, who could not receive the least Benefit from any other Internal Medicine. Another Author tells you, That by wearing a piece of this Stone about the Neck, next the Skin, a Person that was miserably troubl'd with the Stone, which though stubborn to all manner of Remedies, yet in a short time was so dissolv'd into Gravel, that was not only avoided at the Bladder, but by the Corners of the Eyes, through the Pores of the Skin by Sweat, and by Stool also. The same Author confirms the Truth of this; by the like Success upon a great many others. *Monardes lib. de occult. Medicam. propriet.* adds, That a certain Dutcheff, whom he names, had undergone

dergone three Fits of the Stone in a short time; but upon wearing Bracelets made of this Stone, she had been freed of them for ten Years together. The same Author reports further of a Noble-man, that was afflicted with the Stone; who, upon the wearing the Nephritick Stone about his Arm, was used to throw off such vast quantities of Gravel, that he was forc'd sometimes to leave it off, for fear the avoiding so much at a time might do him some Hurt. The Excellencies of this Stone are farther display'd, by their producing several Instances of Persons, that have been cured of otherwise incurable Catarrhs, or Defluxions of Rheum upon the Lungs, of Dropfical swell'd Legs, of any sort of Suppression of Urine, and of Ædematous Swellings in other Parts; all which was effected by expelling Urine in great quantities: And as a Proof that all this was to be attributed to the Virtue of this Stone, they tell you, That upon leaving off the wearing of it, those Distempers would return, and as soon cease again, as the Application of the said Stone was renew'd. They further add, That sometimes it would move Stools as violently, as if caus'd by a strong Purgative. But one great Inconvenience they mention the wearing of this Stone is attended with, *viz.* of causing a very troublesome Itching all over the Body; which would at any time be remov'd by leaving off the Stone for two or three Days, but return again upon the Re-application.

II. Chymists set no less Value upon the Stone, that is taken out of a Man's Bladder or Kidneys, and is call'd by them *Ludus Paracelsi*; the Preparation whereof consists only in calcining it with a vehement Fire into a Salt, and letting it turn into an *Oleum per Deliquium*, by standing in a Cellar, or other damp place. Whatever Vertue may be suppos'd to be in the aforesaid Stone, is to be attributed to the *Sal Armoniac* that is in it; which, whether it be not destroy'd by Calcination, may justly be doubted; and therefore, the Urine newly made by an healthful Young Man, using Wine, doth seem to be endu'd with a greater Diuretick and Stone-breaking Power: To which purpose, I have known several Nephriticks have chosen to take several Draughts of their own Urine (as having an Aversion to that made by others, who possibly may be diseas'd of some foul Distemper, or other) for many Days together, with good Success: For which Reason, Physicians do rather chuse to recommend Goats Urine, which is impregnated with much more *Sal Armoniac*, than that of any other Animal; and herein they all agree, being thereto induced by the manifold successful Experiments upon Nephritick Patients, that it excels all other Diuretick and Stone-breaking Medicines. The aforesaid Urine must be saved, by tying a Bladder to the Goat. Others prefer the Blood of a Goat dry'd, as not only containing a great quantity of *Sal Armoniac*, but its other Particles being dry'd, are harden'd into Cut-

ting Acute Sands. Both the one, and the other, ought to be us'd in large Doses, frequently repeated, and continu'd for several Weeks, if any great matter is to be expected from them.

12. In Conclusion, my Opinion touching the Virtues of those pre-numerated Stones is, That Flints being render'd brittle by Ignition, and Extinction in Water, or Small Beer, or Wine, wherein a good Lump of *Sal Armoniac* hath been dissolv'd, and afterwards grinded into Powder, taken in large Doses, in a Draught of the same Liquor wherein it hath been quenched, may be endu'd with a far greater Power to drive down Urine, Slime and Grawel, and dissolve the Stone by a long continued Use, than any of the most celebrated of them.

Because those that are troubl'd with Gravel or Stone, are almost perpetually upon dribbling, which is increas'd by all sorts of Moisture they can or do drink, whether binding, stopping, attenuating, laxative, or endu'd almost with any Quality, be it ever so contrary to the Stone, or Gravel; for it all runs to the Kidneys, as being the Parts affected, (as I shall further explain below:) And for that Reason, almost every thing is by the Physicians call'd Diuretick, tho' operating by Qualities wholly repugnant to that sort of Evacuation. Hence it is, that *Porcelane* (tho' adstringent, and binding, and consequently, contrary to a Diuretick) is in *Consil. Crato-*ris mention'd, to expel the Stone to a Miracle; and by *Rondeletius* said to break the

Stones

Stones of the Kidneys. And *Knot-Grass*, as astringent as it is, is by *Matthiolus Com. in 4. cap. lib. 4. in Dioscorid. Solenander*, and *Mixal-dus Cent. 4. Distinc. 4.* asserted, to expel the Stones of the Kidneys and Bladder. Also, *Rupture-wort*, no less binding, and restraining, is highly recommended by *Rondelet in Consil. 150. Craton. Gesner*, and *Quercetan. in Pharma. rest. cap. 10.* for a most effectual Plant to break the Stones in the Kidneys. And *Moss* that grows on the Ground, a potent Restringer, is by *Durandes in Hort. Sanitat. Heurnius*, and *Lonicerus*, mention'd to be a certain Stone-breaker. *Plantane*, that noted Adstringent, by *Mr. Ray*; and *Oaken Leaves*, a greater Adstringer, by *Platerus*; and *Cinquefoil*, by *Scroder*, are recommended for Diureticks, and Stone-breakers; besides many other Adstringents that can be nam'd. Moreover, it may be taken notice, that most other Vegetables, Animals, and Minerals are highly commend-ed, tho' specifically appropriated to some part or other: As, among Cephalicks; *Pyony*, by *Trallianus*, *Dioscorides*, *Durandes*, *Lonicerus*, and *Fernelius*; *Betony*, by *Galen* and *Matthiolus*; *Calamus Aromaticus*, by *Tabernæ Montanus* and *Solenander*; the Rind of a *Bay-Root*: And among the Pulmonicks, or Thoracicks; *Maiden-Hair* and *Carduus Benedictus*, and all other kinds of Thistles; *Eryngo*, *Figs* and *Liquorish*: Among the Cordials, *White Dictamnium*, and most (if not all) Aromaticks or Spices, which you may find mix'd in the celebrated Compound Diuretick and Stone-grinding Electua-

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ries, and distill'd Waters: Also among Spleneticks, *Tamarisk*, *Spleen-Wort*, *Roots of Capper*; *Mugwort*, and others, among the *Emmenagoga*; most of the Hepaticks; among the Anti-Scorbuticks, all, or as many as can be found, tho' more particularly, *Black Radish*, and *Horse-Radish*; all the Vulneraries, chiefly *Golden-Rod*, and *Speed-well*; besides a great Number of Miscellanies, appropriated to several Bowels, and particular Diseases; as, *Birch-Tree*, *Guaiacum*, *Dropwort*, *Grass-roots*, the five opening Roots, and their Seeds, *Burnet*, *Saxifrage*, *Horse-Mint*, *Samphir*, *Ashen-tree-wood* and *Bark*, the Juice of *Birch-tree*, *Nettle-Juice* and Seeds, *Valerian*, *Orris*, *Elcampane*, *Bramble-roots*, *Soapwort*, *Bastard-Rhubarb*, *Asarabacca*, *Wake-Robin*, *Baize*, *Onions*, *Squills*, *Garlick*, *Cabbage* and *Colewort-leaves*, *Lovage*, *Garden-Madder*, *Birchwort*, *Restharrow*, *Featherfew*, *Penny-royal*, *Tansie*, *O-rigan*, *Spignel*, *Poley*, *Calamint*, *Hysop*, *Pellitory*, *Germander*, *Groundpine*, *Vervain*, *Southern-wood*, *Strawberry-leaves*, *Willow-leaves*, *Water-Germander*, *Wild Thyme*, *Skirrets*, *Chamomil*, *Lark-spur*, and *St. John'swort-Flowers*; besides abundance of other Roots, Leaves and Flowers, which by one approv'd Author or other are all esteem'd Diureticks, and Stone-grinders, as well as all Carminative Seeds, viz. *Parsley*, *Fennil*, *Cummin*, *Anis*, *Dill*, *Carui*, *Daucus*, *Cardamom*, *Marsh-Parsley*, *Lovage*, *Seseli*, *Gromwel*, *Parsnips*, *Macedonian Parsley*, *Broom-seeds*, *Coriander*, *Garden-Cress*, *Basil* and *Fennel-Flower*, the four greater and lesser cold Seeds,

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of *Mallows*, and *Marsh-Mallows*, *Cotton-seeds*, *Linseed*, and *Fænugrick-seeds*, &c. *Lupins*, all manner of *Vetches*, *Millet*, *Red Cicers*, *Bay* and *Juniper-Berries*, *Berberries*, *Winter-Cherries*, *Hipps*, *Bitter Almonds*, *Peach*, *Apricot*, *Cherry*, *Plumb*, *Walnut*, and *Hazel-Nut Kernels*. Among *Gums* and *Rosins*; *Gum-Elemi*, *Arabic*, *Dragant*, *Olibanum*, *Bdellium*, the *Gum* of a *Cherry*, and *Plumb-Tree*, *Gum-Lac*, *Therebinthin*, *Amber*, &c. Among the *Animals*; the *Ashes* of an *Hedge-Hog*, of an *Hare*, of *Swallows*, of an *Ass's Liver*, of the *Feathers* of a *Goose* and a *Ring-Dove*, and of *Earth-Worms*; the *Skull* of a *Man*, powder'd; the *Jaw-bone* of a *Pike*, and the *Parings* of an *Horse's Hoof*, powder'd; *Mouse-Dung*, seven or nine for a *Dose*; *Pidgeon's Dung*, *Pullet's Dung*, *Sow's* (*Millepedes vel Aselli*) *Grass-hoppers* dry'd, *Beetles*, the *Powder* of an *After-Birth* dry'd in an *Oven*, the *inward Skin* of a *Cock's Maw* dry'd, the *Guts* of a *Swan*, the *Powder* of a young *Pidgeon* dry'd in an *Oven*; the *Powder* of the *Bird Wag-tail*, dry'd by the *Smoak* of a *Chimney*; the *Ashes* of a *Troglotite Sparrow*, (of which abundance of *Authors* speak *Wonders*;) the *Blood* of a *Fox*, drunk warm, as it comes out of the *Veins*; the little *Bone* taken from the *hinder Knee* of an *Hare*, (greatly extoll'd by *Forestus* and *Fernelius*;) *Cantharides*, which some *Authors* tell you, may be given in a total and long-continued *Suppression* of *Urine*, caused by the *Stone*, which if not remov'd, the *Patient* must die; and therefore

as a desperate Disease requires a desperate Remedy, some that have more Courage than Discretion, have adventur'd to give it in a Dose, from half a Fly, unto a whole one, powder'd, in a Draught of Clarify'd Whey, Emulsion of the four greater cold Seeds, or Skimm'd Milk once boil'd up, and grown to be luke-warm, with very ill Success; for considering, that the Patient's Strength is reduced to a very low and deplorable State, before it is administer'd, if peradventure the venomous Medicine hath wrought through, so as to strain or squeeze out some Drops of Urine, which appears bloody also, it hath left such a painful burning Strangury, which, with the Addition of the Nephritick Pains, and Defect of Spirits, hath soon put an end to the miserable Sufferer; so that it had been better to let a Man die, than to kill him: But where that Medicine doth not pass, it doth infallibly torture the Patient out of his Life. However, if any be fond of the Use of them, they must either toast them, and half, or wholly calcine them into Ashes, which then will have entirely divested them of their Diuretick Faculty, no other Virtue remaining in them, than what is in the other Ashes; or calcine them by Corrosion, which is dissolving them in Spirit of Salt, or Nitre, whereby their venomous Quality is much infring'd, and the Diuretick in a great measure preserv'd. The Toasting is in holding them over an hot Fire in an Earthen Pan, and there stirring them, until they fall almost in-

to Powder, which doth greatly abate their Venom, together with some part of their Diuretick Power. In the same manner Bees (*Scarabæi*) may be serv'd, being not very much inferiour to the afore-mention'd *Cantharides* in their Pissing Faculty. The Case being well consider'd, where Diureticks exhibited in large Doses, and frequent Repe- titions, do not answer the End, 'tis most cer- tain, the true Cause of the Suppression of Urine is mistaken; and consequently give what you please of that kind, it will prove unsuccessful; for a very small Remedy, if it hits the Cause right, doth ever bring sudden Relief; and therefore in such Cases, we ought to use our greatest Industry, in enqui- ring what other Cause may in all probabili- ty cause such a Suppression, and not persist in an Opinion, the first Appearance of the Distemper hath put us in. *Cantharides* may be an useful Medicine externally apply'd, but a very suspicious one internally given. I do remember, I have several times made Trial of infusing two Drams of them in a Quart of French Brandy, and being filter'd through a Paper, have given thereof, from one Spoon- ful to two, in Clarify'd Whey, or Pissane, against inveterate virulent Gonorrhæa's, but I could never find I advanc'd much in the cu- ring of them.

I have here got together a large Catalogue of *Diuretics* and *Lithonriptsics* in Simples, yet it is not a compleat one; for upon a further search of Authors, it may be increas'd to double

double the Number, so that as far as I observe, no less than the whole internal *Materia Medica*, even the addition of Purgatives and Vomitives, (which seldom move Stools without provoking Urin) cannot be sufficient to make up a full and compleat List of Piss-drivers and Stone-grinders. The cause of increase of so great a Number of these, I can assign to no other, than to an incautelous Credit Physicians have given to all sorts of People, that upon pretence of being troubl'd with this or that sort of suppression of Urin, Strangury, or other symptoms of the Stone, have declar'd a relief they received from this or that Remedic, though never so contrary, improbable, or preposterous (as you may perceive by the aforesaid recital of Simples, and other Compositions thence fram'd), without examining the bottom, the possibility, or probability, and manner of acting of such like Remedies, in respect to the Indications, that ought to be taken from the Disease it self, the Causes thereof, the Symptoms, and chiefly from the *Actio laesa* of the Kidnies, which cannot well be performed, without the true knowledge of the Function or Action of the Kidnies, and their *Modus agendi*, which (and indeed the Function of all the Bowels, and the *Modus agendi*) in my weak opinion is slubber'd over, or at least very insufficiently discoursed, so that its scarce possible to give any good Judgment of it. In order to that, I shall presume to set down some Positions, which (to speak modestly) you may please only

ly to take for Suppositions. 1. That the Antecedent cause of a *læsa mictio* is very oft in the Kidnies, and consequently that the cause of a total or partial suppression of Urin, a Strangury, a *Diabetes*, (which is an *Augta mictio*) *Ardor Urine* and other Symptoms are in the same part.

2. The Office or Function of the Kidneys being chiefly the separation, and excretion of the *superfluous serum*, all, or most liquid or potable Matter, that's admitted into the Body more, than is necessary for the Blood to be supply'd with, doth naturally and by Inclination (if I may so speak) flow, and tend or is impell'd by the Spirits, or (if you like the Expression better) by the parts of the Body to the Kidnies, especially if in any wise preternaturally affected; the reason is, because the Spirits (I mean the Animal) chiefly flowing to succour any part that is in distress, and they being the only and chief impulsors of all the Humors in the Body, it must follow, that all Potables, be they adstringent, gross, thick, thin, sharp, sweet, sour, or indued with any other quality, must be impell'd to that part, whither the Spirits flow most, which must be to the Kidneys, if preternaturally affected. Hence it is then, that Physick Authors observing all manner of Simples and Compounds being either potable of themselves, or given in any thing that is potable, do provoke Urine in those, whose Kidneys are any wise preternaturally affected, have taken in so many hundreds of Simples and Compounds, , to the almost innumera-
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ble Number of *Diuretics* and *Lithonriptsics*, tho' far from being to be esteem'd as such, either by Reason or Experience; for to assert that Adstringents (as many of the reputed *Diuretics* are) do move Urin otherwise, then Medlars do Stools (*per accidens*) *comprimendo*, cannot be thought reasonable: And daily Experience doth prove, that many *Diuretics*, that are suppos'd to be properly such, are taken in large quantities, by those that are in Health, without adding a drop of increase to their ordinary measure of Urin, as appears by those, that have continu'd the infusion of *Millepedes* in their Drink for a considerable time, and in others that drink great quantities of *French* and *Rhenish* Wines, without any proportionable increase, and sometimes scarce piss before the next day; which, as I said heretofore, renders the operation of *Diuretics* very uncertain; whereas other Evacuatives, as Vomitories and Purgers, have a more certain operation in most Bodies.

As to the *Modus Agendi* of the Kidnies in their Function, I cannot imagin, that the *Serum* is separated from the Blood in their *Parenchyma*, *colando* (as it is commonly expressed by Physicians) by being strained thro' their narrow passages, as if it were by a Sieve; because the *Serum* is so thoroughly perfused and mix'd with the Blood, which in many bilious Constitutions is as thin, if not thinner than the *Serum* it self, that consequently the Blood must pass with it, which would always occasion a bloody Urin. So that there must
be

be another sort of separation, conceived by me, to be efficiently performed by the Animal Spirits, which you are not to apprehend to be singly floating in the Nerves, like Air in a Bladder, but that they are contain'd in a most subtil piercing *Lympha*, as may be perceived by the wound of any Nerve, which gives occasion to the said *Lympha* to drop out, and is then call'd a *Gleet* of a Nerve. This Spirituous *Lympha*, that's perfused through the Body of the Kidneys, doth by its most piercing subtil Particles, coagulate the more sulphurous and glutinous Particles from the abounding salin Armoniac, (that are dissolved in the *Serum*) which by having some repugnancy and contrariety against them, it doth, together with the *Serum* precipitate down the narrow Chanals of the *Parenchyma* of the Kidneys to the Ureters, whence by stimulation, and their own weight, they are moved to the Bladder. That the aforesaid Function is performed *efficienter* by the Animal Spirits, is proved by several Instances of the same Import, *viz.* some may remember many Years past, I Publish'd a Treatise, Intitl'd the Case of a Nobleman (then) lately deceased, wherein was given an account of a puncture of a Nerve in the *Plexus Nervorum*, that's near the Groin, occasion'd by the wound of a Sword, that passed slaunt thwart the *Abdomen* down thither, upon which a copious Gleet ensued, and soon after among other direful Symptoms, a suppression of Urin. This those Physicians, as Learned and Famous

as they were, could impute to no other cause than the Stone; but they were deceiv'd by their Conjectures, as appear'd plainly afterwards, upon the defection of the said Nobleman's Body after Decease; his Kidneys, Ureters, and Bladder being found clear of all manner of obstructions, either by *Mucus*, Gravel, or Stone, though the Kidneys were exceedingly wasted, and shrunk into a much lesser Demension, than comonly is found in Men. Upon this fatal Mistake, and consequently wrong Indications, the foremention'd six Physicians did very boldly prescribe the most powerful of *Diuretics* in very large Doses, and long continuatd frequent Repetitions; until by chance, one of their Medicines having a power beyond their Expectation did give a check to the Gleet, that by derivation had deprived so great a proportion of nervous *Lympha*, (wherein the Animals do reside) from the Kidneys, as not to leave a sufficient quantity in them, to make separation of the salin Armoniac *Serum* for Urin, which therefore ought rather to be called a suppression of the *Serum* in the Kidneys, than suppression of Urin, and ought not to receive that Name, before its arrival into the Bladder. But what follow'd? The Animal Spirits being return'd to their former Function, and meeting with a great quantity of *Serum*, (that had not been separated during the long interval of suppression) mix'd with the Blood, that was extreemly attenuated and fused by the preceding *Diuretics*, they separated and excerned

excerned such a profluvious torrent, as caus'd a most violent *Diabetes*, which by my prescriptions was removed in a very little time. Further more you are to take notice, here was not only an abolition, or at least a diminution of the separation of the *Serum*, or *Urin*, as it is improperly called, but an *Atrophia*, or defect of nourishment in the Kidnies, caused through want of the spirituous *Lympha*, or animal Spirits; so that as I hinted in one of the former paragraphs, these are the efficient (*causæ efficientes*, but in no wise *materiales*,) of nutrition, separation, and excretion of all the parts of the Body. Add to the former Instances several others of the Gleet, I have before and since observed, occasion'd by the cutting thro' of Nerves in a Wound, and punctures of Nerves in the Arm upon unskilful Bleedings, which though they did not effect so intire a suppression, as the puncture of a Nerve near the Kidnies, yet they have caused an evident diminution of *Urin*, and an *Atrophia* in that part, into which they were inserted.

Several other suppressions of the *Serum* in the Kidnies I have now and then met with, that were mistaken for suppressions of *Urin*, occasion'd by the Stone, to the fatal ruin of the Patients, among which I have given an account of one very remarkable in a Treatise called, *The Art of curing Diseases by Expectation*. I shall here make a short discourse upon the *Ætiology* of the before-cited Disease, wherein the use I make of the *Hypothesis* late-

ly set down touching the *modus agendi* of the Kidnies in the separation and excretion of the *Serum*, will plainly appear. The Patient there mentioned was of a healthful robust Constitution, and fleshy habit of body, much on Horseback, and scarce at any time long sedentary; his Appetite was much to salt Fish, Pork, Beef, Cheese, and other substantial Food. His Blood upon phlebotomy in the Arm appeared florid, thick and glutinous, with very little *Serum*. He felt constantly from the beginning of his Illness a weighty pain about his Loins, and pulsatory also; his Urin was pale, crude, dreggish and turbid, made at pretty long intervals, and in very small quantities, because the *Serum* was not, neither could it be separated in the Kidnies. For his Blood being engendred out of a thick glutinous Chyle, and this out of gross, glutinous Aliments, must necessarily be resinous, or thick and glutinous, and consequently as impossible and unfit to mix with an obtuse *Serum*, as Rain-water with Therebinthin, unless something be added to the Water to render it piercing, whose sharp points may divide, cut and insinuate into the pores of the viscous Resin. Though the Patient did drink great quantities of Liquor of one kind or another, the greater part of the *Serum* it produced, was thrown out by insensible perspiration, and very oft by copious Sweats, whilst a small proportion would crowd into the Kidnies, and yield matter for that little Urin that was made. This glutinous, thick and

and fibrous Blood must be impelled through the Extremities of the emulgent Arteries with great difficulty, and very slow, and with greater difficulty and slowness into the extremities of the emulgent Veins, whereby a fullness and distention must be occasioned, that caused the weighty obtuse and pulsative pain in the Loins, through the defect of a just and sufficient Circulation, which could not but raise great distentions in the hypochonders, unequal pulsations, and other Symptoms, too many to be here discours'd of by retail. From no other Remedies, but such as obtain a power to remove that clammy, stringy Constitution of the Blood, could any benefit be expected; though on the contrary, improper lithontriptic diureticks were advised, impelling the Blood more into the Kidneys, and cramming them, whence the pain increased, and the Serum was more damm'd up, until at last the Patient being injudiciously sent to the Bath, those hot acidulous Waters inwardly taken, put a quick period to the whole matter.

Neither is it always a want of salin armoniac Serum, or defect of its permixture with the Blood, that are the causes of a suppression or abolition of the separation and excretion in the Kidnies, is evident in an *Ascites*, or Dropsie, where there is salin Serum in abundance, and so thorowly mixt, that the Blood is but little thicker than Water, and so little glutinous, that the least drop will scarce stick to any thing; yet notwith-

standing very little *Serum* is evacuated by the Kidnies into the Bladder, which redounding therefore so much in the Vessels, is thrown into the Legs (which are then improperly called *pedes œdematosi*) thighs, *scrotum*, or the capacity of the Belly. So that the suppression of Urin, as its commonly termed, is the most frequent cause, and which most Physicians do agree unto,, of an *Ascites* and *Pedes œdematosi*, succeeding a long Ague, Chronical *cachexia*, Jaundice, continued debauches of Brandy, or other strong Liquors, and great Hæmorrhages. Though in most sorts of such Dropsies, the most potent of supposed Diureticks are used, and lixivial Remedies, as Lies of Broom-ashes, and others, taken to excess, yet no more Urin, but rather less is expelled, and the Dropsy increased. In some of these cases, I have known monstrous hydropical Swellings reduced by a month or two's drinking of the *Bath Waters*, which, at proper Seasons of the Year, a Course of *Sparw* would have perform'd in less time. The cause of this kind of suppression can only be imputed to the Animal Spirits, or the spirituous *Lympha* being vitiated. But in regard that this subject, together with the examination of its Remedies, that are no less numerous than those against the Stone, would take up too much room, I chose to reserve it to another time.

Among that *farrago*, and mixt heap of Diureticks, and Lithonripticks, there remains I should reduce them to a more choice and select

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select number, such as are chiefly in use, and most celebrated among Physicians, and afterwards give you my slender Opinion upon their *modus agendi*, or manner of Operation.

The Roots of the most approv'd are the five opening Roots, but more especially *Persly*, *Restbarrow*, *black Radish*, and *Horse-radish*; among the Leaves, *White Saxifrage*, and *Burnet Saxifrage*; the chief Seeds, Berries, and Fruits, are, *Grumwell-seeds*, *Burdock*, *Broom*, *Daucus*, *Persly*, *Fennil*, *Anis*, &c. *Winter-cherries*, *Hipps*, and *Juniper-berries*, more particularly *Red Cicers*; In the number of Animals, *Millepedes*, or *Sows*; and among the Stones, Salts, and Minerals, *Lodus*, or the Stone taken out of a Man's Kidnies, or Bladder, *Goats Blood*, and *Goats Urin*; *Lapis Judaicus*; *Cineres leporis combusti*, *vitrum ustum*, *sal succini*, *sal prunellæ*, and *Tartarum vitriolatum*.

The principal of the most famed Compositions are *Electuarium Lithontribon*, and *Electuarium Fustini*, the description whereof you may read in *Cordus* and *Wecker's* Dispensatories, being a rude and unaccountable empirical hodge-pot of abundance of Carminative Roots and Seeds, some deobstruent Roots, most sort of Spices, some Gums, &c. as ill proportion'd, as may be.

Among the Magistral Compositions, by this following Syrup *Horatius Augenus* doth affirm to have cur'd Six Hundred of the Stone, which is above Five Hundred Ninety and Nine more, than I do believe.

℞ *Rad. Saxifr. Rusc. Eryng. Levist. Onon. Alb. Gram. Fan. Petrosf. ā ʒβ. Raphan. Sylv. ʒij. fol. Beton. Pimpin. Alb. Urtic. Puleg. Nasturt. Calam. Polygon. Min. Pariet. ā m. i. fruct. Alkek. No. xx. Sebest. No. xv. cort. rad. Lauri ʒij. Sem. Ocym. Bardan. Petrosf. Dauc. Sesel. Mil. Solis ā ʒij. Uvar. pass. liquir, ā ʒvj. Capil. Ven. Polytric. ā m. i. Coq. S. A. in Aq. Capil. ven. lbx. in duplici vase ad lbvj. e quibus cum Sacchar. fin. lbij. & Mell. despum. lbij. f. syr. perfecte coct. & aromat. Cinam. ʒj. & Nuch. Mosch. ʒβ. m.*

Montagnana recommends the following Electuary to that degree, that he doth avow, there can be no Stone, which by it cannot be broke, and grinded into Sand.

℞ *Sem. Apii, Petrosf. gran. Mil. Sol. Rad. Saxifr. Polii Mont. Aristol. rot. ā ʒj. Lap. Spong. Judaic. Lync. ā ʒjβ. Vitri combust. Sang. Hirci prap. ā ʒij. liquirit. pulv. ʒβ. Oxy mel. compos. Sacchar. alb. ā lbβ. Acet. Scillit. ʒβ. M. pro Electuario.*

The five Opening Roots, Grasse-Roots, Carminative Seeds, with other Roots, Barks and Seeds like them, are suppos'd to contain a subtiler hot Spirit, or subtiler moving Particles, which by putting the Animal Spirits upon a quicker Motion, do by attenuating and rarefying the Blood, separate the Serum from it, and consequently make Matter for the Urine, which

which being driven down, acquires them the Name of Diureticks, that can no otherwise deserve the Title of Stone-grinders, than by osent dripping by or upon Stones, may in Length of Time make little Holes into them, and render them brittle.

The *Millepedes* containing a subtil acidulous Spirit, are thought not only by precipitating the *Serum* to be very diuretic, but also by piercing into the Pores of the Stone, whose Figures seeming to be adapted for the reception of those acid pointed Particles of the Sows, become thereby Stone-breakers. But considering their preparation, they are not only thereby deprived of those few subtil acid Spirits, that fly away by the drying of them in an Oven, or otherwise, which is one way of preparation; or are wholly destroyed in their Substance and Virtue, by the other way of preparing them, which is, by washing them well in Rest-harrow-water, next soaking them thoroughly in *Spanish Wine*, which being poured off, they are to be put into an Earthen Pot or Pipkin, very closely cover'd and stop'd, and then to be dried in an Oven after the Bread is drawn, which if it be not done with a very mild heat, and several times repeated, they will be apt to be stewed, and never fit to be reduced into Powder; others do chuse after washing of them in White-wine, to dissolve them in Spirit of Vitriol, whereby not only the Spirit of Vitriol is obtused and impaired, but the acidulous subtil Spirit of the Sows amortised,

This solution is pretended to dissolve the Stone in the quantity of five or six Drops, given in Persly-water, or such like Vehicle. In my Judgment *Millepedes* need no other preparation, than washing the dirt and slime off them with fair Water, after which they are to be but just broken, or very little bruised in a Stone Mortar, and about the number of two or three hundred put into a Matrass or Bolt-head, and pouring three Pints of White-wine upon them; the Glass Vessel being closely stop'd, they are to stand 24 Hours, and the Wine is to be filter'd off, the Remainder is to be dried in an Oven in an open Pipkin, and then reduced to Powder; hereof from Two Scruples to Four may be taken in nine or ten spoonfuls of the impregnated Wine. That this will prove diuretick to those, that are Nephritic, is oft observ'd, though I have know'n them taken, being bruised and steeped in Ale, for their ordinary Drink, for a quarter of a Year together by those, that were troubled with running Eyes, dimness of Sight, Bloodshed, and Inflammations of the Eyes, Dropsies, Jaundice, Phthisick, and other Distempers, without any abatement of those Diseases, or causing more Urine than ordinary; so that People need not be so scrupulous in their Dose in any other Distemper, but that of the Kidneys, whither they, as all other Diuretics, are apt to carry all gross slimy Humours, they meet with in their passage. Many will put seven or eight of 'em in a Mortar, bruise them into a mass, and

and pour a Glas of White-wine upon them, and drink it off without straining. Others hang four or five hundred of them in a Linnen Bag in a Firkin of Ale, and after a Fortnights Infusion, drink the Ale for their ordinary Drink.

From a pretended Observation, that Goats Blood will break the hardest of Stones, which is a Diamond, most Physicians prefer it beyond all other Lythontriptics, advising it to be taken warm, as it comes out of the Veins: this requires some further preparation according to the Sentiments of Vulgar Authors, which is feeding a young Goat with Persly, Fennil, Carrot and Parsnip Tops, Cabbage Leaves, and the like supposed Diuretics, for three Weeks or a Month about the Spring; though others prefer the Autumn, near the Vintage, at which time a Goat is apt to feed much upon Grapes, if he can come at them, whereby they think his Blood is render'd the more diuretic, and cutting. Being then killed, they prefer the Blood, that comes out of his Veins, about the middle of his Bleeding, before that which flows out first or last. No Blood of any Animal doth sooner coagulate in the Air, and dry into a hard, brittle, and sandy substance. On the contrary, the Blood of a Stag only will not coagulate at all, but continues fluid. Now whether the Blood of a Goat being drunk warm, will not so coagulate in the stomach, as to occasion a great weight, pain, and indigestion there, whereas the Blood of a Stag consisting of more Volatile

latil piercing Salts than any other whatsoever, cannot coagulate, by reason of the said copious Volatil Salts, which at the same time will render it the more diuretic, and piercing: so that two Drams or more of Stags Blood warm, as it comes out of his Veins, with four or five Ounces of Goats Urine, will make a more potent Medicine, than any of that kind. Many in a Fit of the Stone, and the Cholick thence caused, by drinking their own Urine (which is much worse than that of a healthful Young-Man) have suddenly removed both to a wonder, and continuing the use of it Mornings and Evenings for several Days together, have render'd the Stone brittle; but this sort of Urinous Draught is attended with a great inconvenience of taking away the Appetite, and weakning Digestion. Beyond all doubt the Urin of a Fox is stronger, and more piercing than any of the before mentioned, as feeding chiefly upon Blood and Flesh, which abounds much more with Volatil Armoniac Salts, than most sorts of Herbs.

As for Alcalious Salts, or such as are by Fire render'd lixivial, as the Ashes of several Animals, their Hair and Feathers, also Dung, and several Chymical Salts of Vegetables and Minerals, operate by an absterfive stimulation, and shrinking or contracting the Vessels, whereby they propel the Humours, and precipitate those that are acid: But all lixivials are experimentally found to abate the Appetite, and extremely disturb the digestion of the Stomach.

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The red Cicers (which are no other than red Pease, and little different in substance and taste from Common Gray Pease) that are in so high esteem for moving Urine, perform it no otherwise than by a flatuous Spirit, whereby they distend the Bowels and Vessels, and rarefie the Humours contain'd in them, that are forc'd forward to gain more room; which is no more than what a Decoction of Tares, and most sorts of Vetches, Pease, Horse-Beans, and Cabbage can, and some of them do effect in a more powerful manner.

It is to be further observ'd, that all Diureticks, of what kind soever, must be used with the highest Caution in the Stone, Gravel, or any kind of Suppression of *Serum*, or Urine, lest by forcing and bringing down gross Humours with them, they cramb and choak up the Passages more than they were; for which Reason they are rarely prescrib'd singly, or in great Doses, and frequent Repetitions, in a Fit of the Stone, Gravel, or Suppression; but either mix'd with those Remedies, that have a Power by their Mucilaginous and Unctuous or Balsamick Particles, to smoothe, relax, widen, and render the Passages slippery; as, Oil of Sweet Almonds and Linseeds; Mallows, Marsh-Mallows, Pellitory of the Wall, Bear's-Breech, Violet-Leaves, Borrage and Bugloss; or giving small Doses of the milder sort of them, and seldom, &c. And in a Fit, they chuse to confine themselves only to Mucilaginous and Emollient Medicines; also to Balsamicks, as Therebinthin, *Lucatellus's* Balsam,

fam, Balfam of *Tolu*, of *Peru*, &c. by Mixture with some other Balsamicks, or gentle Diureticks, made into Bolusses, Electuaries, or Pills, and sometimes Elixirs, and Tinctures; at Intervals advising Clysters, Emollient and Carminative, and now and then Narcoticks; also Half-Baths, up to the Middle, and whole Baths, besides Bags and Cataplasms.

The Prevention of the Return of Fits consists in gentle proper Purgatives and Laxatives, follow'd by proper Diureticks; Mineral-Waters, whether wholly Diuretick, as the Sulphurous Waters at the Bath, *Sunning-Hill* near *Windsor*, *Heywood-Hill* near *Totteridge*, *Islington*, *Richmond*, *Astrop*, *Deptford*, *Henden*, and other Waters; or both Purgative and Diuretick, as *Dulwich-Waters*, *Barnet*, *Epsom*, *Chigwell*, *Pancras*, *Acton*, *Pescot-street* at *Windsor*, *Stretham*, &c. operate by Quantity, Weight, and Stimulation, some by Fermentation and Rarefaction, and others by Quantity, Weight, Stimulation, Fermentation, and Rarefaction.

To conclude the whole Matter, I could never yet, among all these fore-mention'd Remedies, find any beyond proper Oleous Balsamick Volatile Elixirs, and Tinctures; and these ought to be framed of Ingredients as various and different, as the Causes of Suppression of Urine, and Generation of the Stone and Gravel in the Kidneys, may be supposed.

CHAP. XII.

Of Madness.

I must own, that among the whole Catalogue of Diseases, nothing seems more abstruse, and inexplicable, than that Preter-natural Disposition of the Brain, that is attended with a Madness; either without a Fever, as a *Mania*; or with a Fever, as a *Phrenitis*; or any sort of *Delirium*, as a *Paraphrenitis* with, or without a Fever, which doth affect the Brain only secondarily, and *per Deuteropatheian*, as the two former do primarily, and *per Protopatheian*. In all these are *Læsa* the *Imaginatio*, *Sensus Communis*, and *Memoria*. The Manner or *Modus* of their Læsion cannot well be understood, without first apprehending the manner, how they are perform'd in their natural State, which is the great Difficulty, that neither all my Reading, nor the Meanness of my Capacity can remove. I am apt to conceive, there is properly called (without any Necessity of terming it Analogous) a Sensitive Memory, Common Sense, and Imagination in all Animals, in some more, greater, or more exquisite, and of greater Power, than in others. A Dog seeing a piece of Meat held to him, at a greater distance than he can be suppos'd to smell it, the *Idea* or Impression which at another former time
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the said piece of Meat, or something like it, made upon his Sight or Smell, is an Argument of Memory, or else would no more run at it, than to a Stone, or a Logg; the distinction he makes, that it is neither a Stone or Logg, or any thing else, but a piece of Meat, signifies he hath common Sense, and many Dogs though they are not hungry, and cannot eat it, they will run at a piece of Meat, or a Bone, carry it away into some retired place, and there bury it, whither they will repair, to dig it up and eat it upon the return of their Hunger, all which implies evidently, they are endu'd with Memory, common Sense, and Imagination; which appears plainer, when a Dog hath been observ'd sometime to bark, walk about, return to the place he left, and do several other Actions as if he were awake, in his Sleep, caused by Impressions or *Idea's* made in his wakeful time, that move his Animal Spirits when sleeping; the variety of which motion excited by those impressions, imply Imagination, Common Sense, and Memory, which is further confirmed by the Madness or *Mania*, Dogs, Hogs, and other Beasts, feeding upon Carrion and corrupted Food, are subject unto, depraving their internal senses, so as to commit Violence to all Creatures, they formerly were familiar with: And lastly their sensitive Passions, (so termed in distinction to those, that are excited by the intellectual or rational Faculty) as Love, Fear, Anger, hatred, is a sign they do know, and distinguish, which are

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Acts of the Internal Senses. The Love of a Dog is easily perceiv'd by his Fawning, his Fear is discover'd by the holding a Stick at him, his Anger by biting, and his Hatred, which is a continuatd Anger, by his Aggressing of Cats, Rabbits, Bears, Bulls, &c. And among all Beasts, the exercise of the Internal Senses, and Sensitive Passions is most remarkable in an Elephant, as may be observed in the several wonderful Relations, very credible Authors do make of them. For a little digression the affinity of the Subject puts me upon this Query, Whether a Maniac or a Madman biting another Man, or a Dog, may not have the same Influence upon the Man, or Dog that's bit, in causing him to go Mad, and occasioning an *Hydrophobia*, as the biting of a Mad Dog has upon a Man, a Dog, or a Hog? Though it be probable, that the venomous bite of either is reciprocal, yet I never heard it confirm'd by experiment.

Without ascending so high as the Intellectual Faculty, comprizing the Rational Memory, Common Sense, and Imagination, I shall for the present endeavour to satisfy myself in the *Modus* of these sensitive, or Animal Internal Senses, by the following Notion. I will suppose, that all external Sensation (of the external Senses) is performed by an Impression, or rather Pressure, made by the sensible external Object upon the Sensory or Organ immediately, and mediately by that, upon the sensitive Nerve, be it Seeing, Hearing, &c. Or it may be conceived thus;
Sensation

Sensation is the perception of any sensible Object: All Perception is by Contact: All Contact is by corporeal Impression, and Impression by local Motion. Here ariseth an Objection, that its not likely, that a visible Object at fifty or three score Leagues distance, as the Peak of *Tenariff*, should reach so far, as by Contact, Impression, and local Motion, to affect the *Tumica Cornea* or Sight; or that the fixt Stars, Which are more remote beyond all Comparifon, should reach the Eye, so as to make a corporeal contact upon it. The Answer contains no difficulty, if you will suppose that no object is visible by it self, but by light or *Lumen*, and that *Lumen* is a circular Emission or Emanation of luminous Particles from *Lux* (which in reference to the precited Instances is the Sun) and is extended as far above the Sun probably, as it is to us below it. The Interception of the said luminous Particles by colour'd, figur'd and quantitative Bodies, and their being by them in the Interception modified and determined, do thence reach to our Eyes. And why should not Light be as diffusive, or disperfive a Body as Air, (filling so vast a Region as it doth) being much more subtil than it, as passing through every pore of it? Light hath quantity, *viz.* Longitude, Latitude, and Profundity as much, and as properly, as Air, or any other Body. Being condensed by a thick Convex Glass, it hath Weight or Gravity, as might be experimentally found, were the Glass artificially weighed) No less than Air

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condensed in a Retort by a Pump. Light rarefies, the Air, which Darkness condenseth. The Light, and Colours, which are only Modifications of the Light, (for without Light, all things are dark, and of no Colour,) make a Pressure upon the External Tunick of the Eye, (consisting chiefly of the Filaments of the Optick Nerve, whence it is this Membrane or Tunick becomes the most sensible of any in the whole Body, scarce enduring the softest Touch of any external thing without an exquisite Pain,) which is very perceptible to those, that look against the Light of the Sun; this being continuatd to the Optick Nerve, and thence to its Beginning, is what I understand by Sight.

But here an Objection may be offer'd; *Quicquid recipitur, recipitur admodum Recipientis.* The Sensitive Nerves, as the Optick, Auditory, &c. being all of one Composure, Constitution, or Temperament, and the Spirits that actuate them, being all the same, must receive the Impression of Sensible Objects all alike, and after the same manner; and consequently Light must be tasted, or a Sound must be seen, &c. which is false.

To this I give in Answer, That all Sensation is by Contact, that is, by a real or material Action, and not by immaterial *Species*, or Emission of Animal Spirits, which are vain Expressions. The said Contact is the same, and made in the same manner; but the Positions and Figures which it makes upon the Nerves, and its minute fibrillous Parts,

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are different as much, as the Figures upon a piece of Dow, (which is the same in comparison throughout all its Parts,) made by several Stamps; so that the Figures made by a visible Object upon the Pores of the Optick Nerves, and upon the Spirits included in them, are different from those that are made upon the Nerves of other Senses by other Sensibles. 2. That the Sensitive Nerves do differ each from the other in Softness, Bigness, Density, and other Qualifications. 3. That the immediate Sensation is not in the Nerves themselves, and the Animal Spirits contain'd in them, but in their invisible minutest Terminations, or subtilest *Fibrillæ*; and therefore I assert, that the Sight is in the *Tunica Cornea*, the Hearing in the *Tympanum* or Drum, as much as the Sense of Feeling is in the *External Cutis*: For supposing that the *Tunica Cornea*, and indeed all the Tunicks of the Eye, are Expansions of Nerves, and composed of innumerable most minute Chanals, that communicate with the Pores, wherewith all the Humours of the Eye are pervious, and all filled with Animal Spirits; the Positions they are put into, and Figures that are impressed upon them, are continued to the Optick Nerve, and thence to its Beginning in the Brain. I will not here undertake the Task of an Oculist, in explaining the Concentration of the Optick Spirits about the Pupil, and the several Changes of Figures they undergo by Reflections in the Humours of the Eye, but pass over to the Hearing, the Seat whereof

(as asserted before) I take to be in the Drum, and the Terminations of Fibres of the Auditory Nerve in it, upon which Pressure being made by the Air containing the Sound, and continu'd to the Beginning of the Auditory Nerve, is the Cause of Hearing. Wherefore I can in no manner be perswaded, that the Sound made upon the Drum, beating the Hammer (*Malleus*) against the *Incus* (Anvil,) and propagating the Sound to the Internal Air contain'd in the long crooked Passage beyond it, is by the Means thereof carry'd to the Auditory Nerve; the Use of the said Internal Air being rather to keep the Drum stretch'd, (as a Bladder is kept distended by the Air that is blown into it,) and magnifie the Sound by the Hollow, containing nothing but Air; as you may observe in a Military Drum, the Hollowness whereof doth exceedingly magnifie the Sound that is made upon it by any sort of Percussion. That these little Bones placed in the Hollow of the Air, are so instrumental to Hearing, I cannot well understand, but do rather conceive their Use to be for a Stabiliment or Fulciment of the Hollow, and keeping the Drum, and the Circumvestient Membrane of the said Hollow distended. Hence it is, that the Drum of the Ear being by moist Weather, or damp Southerly and South-West Winds somewhat relax'd, the Hearing is dull'd, and not so sharp as it is in clear dry Weather, when the Wind gently blows Easterly, or North-East. Moreover, when the Drum hath been extreemly stretch'd by a near violent

Noise, Thunder, or Great-Gun, so as it cannot return to its due Streightness, but must fall into a wrinkl'd Skin, the Hearing is either wholly lost, and destroy'd, as it hath happen'd to several having a thin dry weak Drum, upon a near and extream sharp Sound; or is so obtus'd, that they can hear but very indistinctly. The like Accident may happen to the Sight, when any very Luminous Body makes too long and too near an Impression upon the *Tunica Cornea*, whereby being too much thinn'd, and distended, it doth cause a Blindness; to prevent which, Nature hath framed the said Horny Coat thicker and stronger, than any of the inferiour Tunicks of the Eye, the Use whereof (namely the Tunicks) I take chiefly to contain the several Humours, which reflect or turn back the visible Object, or Pressure made by it, to the *Tunica Cornea*, as the Quick-Silver on the back-side of the Looking-Glass stops, or returns the Object to the Surface of the Glass.

The most excellent of the External Senses is the Sight: Its Organ, that wonderful Machine of the Eye, consists of a greater Number of fine smooth polish'd Parts, than any of the other Senses, and is more in Use and Exercise than all of them together; for a Man that is awake is always seeing, and is commonly accounted awake, because we observe his Eyes are open; so that necessarily a far greater Proportion of Animal Spirits, and the finest and subtilest of them, is consum'd by Seeing, than by all the other Senses conjunctly:

junctly; whence it is, that Sleep being destinated for the repair of the Animal Spirits, we always perceive the necessity of it approaching first in our Eyes, which makes People commonly say, they are so sleepy, they cannot keep their Eyes open; and therefore we do as commonly conclude a Man to be in sleep, because his Eyes continue shut. It is no wonder then, if blind Men can abstain longer from sleep than others, or that their other Senses are much more exquisite, than in those that can see; because that great flood of the finest Animal Spirits which the sight doth require, is distributed to the other external Sensories. Their internal Senses are also much stronger, in regard many blind Men have been observed to have stupendous Memories, and wonderful Phantasies: Thence it is likewise, that when a Man hath a desire to call any thing to mind, which he had almost forgotten, or to think very seriously upon a Subject, he is apt either to shut his Eyes, or look down to the ground, whereby a proportion of the optick Spirits are kept in the Brain, to assist the internal Senses. Moreover, because so vast a supply of Animal Spirits is requir'd, to be transmitted to the Eyes for Sight, Nature hath fram'd the Optick Nerves bigger, than any in all the Body, being the only Nerves, that have a perceptible hollownes in them, and thereby render'd capable to give passage to such great Floods of Spirits; not only to supply for that long continuance of Seeing, but also to sup-

ply that variety of Parts, which is greater than those, the Organs of Hearing, Smelling and Tasting do consist of. I expressed, that commonly a Man seeth, or useth his Sense of Seeing, as long as he is awake, by reason of the constant readiness of visible Objects, that will crowd in upon the Sight; he doth not in like manner always hear, or his Hearing is not always in exercise, though he can always hear, by reason there is not always a Sound or Noise in Being, to crowd in upon him. And though it is possible for a Man to consume or spend abundance of Animal Spirits, by hearing a continual Noise from Morning to Night, so as thereby to make him sleepy, yet it seldom doth happen, because Nature can better endure the waste of Auditory Spirits, which are incomparatively grosser than the Optic, the loss and wasting whereof being much greater, and a greater abundance being required for the Sense of Seeing is the cause, why we always perceive the necessity of Sleep in our Eyes, before any of the other Senses, in which also the like necessity is perceptible; in regard, that when a Man grows sleepy, he doth not care to hear, or use any of his other Senses. And though by much stirring or local Motion, and other Labours, the wasting of the Animal Spirits in the Joints, doth occasion sleep, yet its always first perciv'd by weight or drowsiness of the Eyes, because they are deprived of their due proportion of Animal Spirits, that were trans-

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mitted to the Limbs, and wasted by their continued Exercise.

Before I recede from this Subject, its convenient I should explain, what I mean by describing all Membranes to be expansions of the extremities of Vessels, in order to make it appear, that the Seat of all the External Senses is in the Membranes, and not in the Nerves. That the *cutis* or ambient Skin of all Animals is a Membrane, cannot be doubted, when its look'd upon, after its dress'd by the Tanner or Fellmonger into Leather. That it consists of the Expansion of the Extremities of all the Vessels, as of Nerves, Arteries, Veins, and Lymphæducts, is evident by its exquisite Sence of Feeling, and by the least superficial hurt of a Scratch, causing small owlings of Blood, and by Sweat, the extremities of the Nerves importing feeling, as the extremities of the other Vessels lets out Blood and Sweat. By expansion, I do not understand a flat spreading out of the ends of the Vessels, as if it were Dow expanded by a Rowling-pin, but I do apprehend the said Vessels towards their terminations, to be divided into thousands of small Filaments, and glewed together in the *Cutis*, by a glutinous substance, (engendred out of the Humours, brought thither by the aforesaid Vessels) that is not so stringy or fibrous, as to be called Flesh. It is scarce denied by any of the Learned, that the Ambient Skin is the chief Seat of Feeling; for though other Membranes, as the *Periostium*, the Internal

Membrane of the Kidneys, and moſt of all the *Tunica cornea*, and next to that, the drum of the Ear, are of a much more exquisite Senſe, than the Skin, as conſiſting of a far greater proportion of Nervous Expansions, and conſequently too tender, and therefore not ſo proper to diſtinguiſh all ſorts of Touches or Impreſſions, as hard, ſoft, rough, ſmooth, hot, cold, &c. which Impreſſions are thence continuatèd, by the nervous Filaments to the bodies of the Nerves, and at the ſame Inſtant to the beginning of them, and thence to the Common Senſe, which doth diſtinguiſh theſe Touches or Taſts into ſpecifications of hard, ſmooth, &c. And here by the way, it may be obſerv'd from the inſtance of ſome Paralytics, who have loſt the Senſe of Feeling in ſome of their Joints or Members, though their mobility or motion remains intire, that for the moſt part thoſe Nerves, that proceed from the Brain, bring the Senſe of Feeling, and thoſe from the *Medulla Spinalis* are cauſes of local Motion, which is an Argument, that the Spirits that flow immediately from the Brain, are much more ſubtil, than thoſe that are derived from the Marrow of the Back-Bone.

What I ſay here, is not to be underſtood ſo generally and abſolutely, which made me only intimate, that for the moſt part, and not all, the Nerves immediately proceeding from the Brain, do only bring Senſe; for ſome of them do alſo conveigh motion, but withal a motion ſo agil, nimble, and durable;

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or frequently repetible, beyond what any of the Spinal Nerves do or can perform, as appears in the nimble and frequently repetible motion of the Eye and Eye-lids, of the Tongue, &c. Neither do I exclude the Spinal Nerves, from transmitting Sense and Motion together; but am to be understood, that these fine Spinal Branches of Nerves, and consequently containing Spirits more subtil, that are disseminated through the *Cutis*, being the Seat of the *Tact* do communicate the Sense of Feeling, and the other that are more gross, and dispersed through the Bodies of Muscles, cause Motion.

That the Sense of Feeling is more exquisite at the ends of the Fingers and Toes, proceeds from the greater concurrence of fine capillar Nervous Terminations in those extreme parts.

The spongie Membrane of the Tongue, which appears to be an expanded Texture, out of the Filaments of the gustative Nerves, and of the Extremities of the Coats of Arteries, Veins, Salival and Lymphæducts, is likewise found to be the Seat of the Taste, especially about the Tip, where there is a greater concurrence of Nervous Filaments.

In like manner, I do conceive the Drum of the Ear to be a thin subtil Membrane, composed of the Filaments of the Auditory Nerve, and the extremities of other Vessels, that are inserted into it. The sound that from without makes its pressure upon the Drum, being enlarged by the hollow of the Tortuous narrow passage, is carried by those Filaments to
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the Trunc of the ſaid Nerve, and thence continued to the beginning of it, and to the Common Senſe : So that the ſound to me doth not appear, to be carried down to the further end of the ſaid tortuous Paſſage, and thence to the Auditory Nerve, no more than the preſſure of a luminous Object upon the Horny-coat, is continued to the Cryſtalline and vitreous Humour at the bottom of the Eye, to be thence communicated to the Optick Nerve, with which it doth not ſeem to have any immediate Communication; for as I ſaid before, the humours of the Eye wrap'd up by the ſeveral Coats to keep them together from dropping aſunder, ſeem to me only intended, to modify and reflect the Object back again to the Horny tunic, whoſe contexture is chiefly of the numerous Filaments of the Optic Nerve. The *Tunica Cornea* to be aptly diſpoſed to receive the Preſſure of viſible Objects, muſt be kept up diſtended by the watery Humour (*humor aqueus*) under it, which if it be any thing leſſened, either by evaporation in a hot Seaſon, or by a Fever, ſo as to relax the ſaid Tunic, the Sight immediately grows dim upon it; and if it wholly runs out by a Wound, ſo as the Tunic happens to fall in wrinkles, then the Sight is wholly loſt. In old Men the Sight becomes dim, and ſo it doth oft upon a continual Fever, by reaſon that by length of Time, or Age, and by Exiccation, the *humor aqueus* is ſomewhat diminifh'd, and the Tunic thereby is ſomewhat relaxed, which

makes it seem thicker, and consequently not adapted to receive so vigorous an Impression.

It may likewise be observed, and is now generally so received, that the Seat of Smelling is not in the Olfactory Nerves (I do not mean those that are commonly so call'd by the Antients, that had mammillar terminations, (*Processus mammillares*) which are now taken to be rather carriers off of some Excrements of the Brain) but in the internal Membrane of the the Nostrils, through which the Olfactory Nerves are expanded in Filaments.

Since then it appears, that Nature having plac'd the Seat of all the other external Senses in external Membranes, as parts to which the external sensible Objects do first arrive, and make their first and most sensible Impression; it is a perswasive Argument to me, that the Seat of the Sight is in the *Tunica Cornea*, or *Sclerotica*, being the most sensible, and consequently chiefly consisting of Expansions of the Optic Nerve, whereas the *Tunica Uvea* or *Chorooides*, consists more of a contexture of Terminations of other Vessels. It will not be impertinent here to offer a few seeming Reasons out of a great many, that induce me to suppose the *Cornea* the Principal Seat of Vision, without excluding the necessary concurrence of every Tunic and Humor of the Eye, a great Fault in any of them being as capable to occasion an abolition, diminution, or depravation of Sight, as the least considerable Wheel in a Watch being disorder'd, may cause it to stand, move too slow, or too fast.

I have before aſſerted, that all Senſe is by immediate Contact of any corporeal ſenſible Object. The Touch, Smelling, and Taſte are by ſimple Contact, their Objects conſiſting of groſſer Particles; but Seeing and Hearing are, as it were by a double Contact, that is, by reflection, becauſe their Objects are more ſubtil, and without a due reflection, could not be perceived by the Eye or Ear; for by Reflection the ſenſible Object is much ſtrengthned, and conſequently obtains a greater force to move the Sensorie. The ſound made upon the uppermoſt Skin of a Drum, would not be ſo ſtrong, or make ſuch a ſort of a ſound, were it not reflected by the undermoſt Skin. Wherefore Light, or any luminous Object, being a Body the moſt ſubtil of all others, muſt neceſſarily require a due Reflection, before it's powerful enough to move the Sight. Its allow'd by moſt, that Light paſſeth in Rays, that is in Lines of continued luminous Particles through the *Cornea*, and *Humor Aquens*, to the *Foramen Uvae*, where being contracted, or gathered cloſer, they make a conical Figure.

The Cryſtallin being the moſt Diaphanous, Compact, thick, and fulleſt of Pores, is capable to be crowded with a great quantity of luminous Rays (not unlike thick Glaſs, which by condenſing the Rays do magnify the Light) that are reflected or turned back by the *Humor Vitreus*, which in colour and capacity of receiving luminous Beams, through want of ſutable Pores,

Pores, may aptly be resembl'd to Quicksilver behind a Looking-Glass, reflecting luminous Objects. That those Rays are reflected by the *Humor Vitreus* is seemingly at least proved to me, by the seeing of those false Appearances of Flyes and Motes in a *Suffusion*, which appear to the Sight to be floating in the Air before the Eye, or *Tunica Cornea*: For supposing that the Light carried those little Flies or Bowls directly down to the *CrySTALLINE*, and thence to the *Vitreus*, *Retina*, and Optic Nerve, how can they appear floating in the Air, or on the outside of the *Cornea*, unless they were reflected back again from the *Vitreus* to the *Cornea*, to make their Impressions there? All Refractions, which in Opticks are vulgarly imputed to a *duplex medium* of different Natures, are double, or broken Reflections, as appears in a Stick, that's partly in the Water, and partly in the Air; so that a Refraction not being possible without Reflection, it follows, that where a Man seeth every thing double, by reason of the removal of the *CrySTALLINE Humour* out of its place by a fall, blow, or other violence, the visible Objects are refracted, by a part of the *CrySTALLINE* that retains its place still, and partly by the *Medium* that is in that part, whence the *CrySTALLINE* was removed.

To shew, how these sensible Impressions are at the same instance carried to that part of the Brain, where the Internal Senses are seated, is my chief Design; and in Reference to that, I have been the more particular in explaining the

the external Senses, and the *Modus sensationis*. I do conceive then, that the Nerves do consist chiefly of congregated Filaments, drawn into length, besides others that are lateral, and that the beginning of the Nerves are Filaments of the medullar part of the Brain, (whereof its only supposed it doth consist) congregated and gathered together into one united body, which by being afterwards divided into so many lesser congregated Bodies, doth constitute each of the beginning of the said Nerves. Wherefore I do apprehend, that an impression made upon any of the sensories that consist of Nervous filaments, the impression by continuation (in the manner formerly mention'd in the Instance of a Cord) is carried to the beginning of the Nerves, and thence to the united body of the Filaments of the *Medulla cerebri*, were one object is distinguish'd from another, which I term *communis sensatio*, or *sensus communis*. I will likewise suppose, that besides those prolonged Filaments, the Nerves are filled with innumerable lateral ones, of several figures, and minute dimensions, the various positions of which being actuated by Animal Spirits into several representations, impressions and figures, if permitted to remain so, is Memory, and when compar'd, and variously composed, one to another is Imagination. So that I do conceive Memory to be the *basis*, and antecedent to Imagination, as common Sense is of Memory, which I cannot apprehend to be other than various Acts of the Cognitive;

noscitive, or *Sensitive* faculty. I do very well know, that applying the same Assertion to Rational Memory, and affirming that Memory is the *basis*, and antecedent Cause of Rational Imagination, admits of a considerable Objection, *viz.* That very oft Persons of the weakest Memory have the strongest Imagination, and the best Judgment, and that the Memory may be lost, though the Imagination and Judgment solely depending upon that, continue entire ; which I do deny, for as much of the Memory of things as is lost, so much of the Imagination must be lost ; for supposing that you have intirely forgotten the *Idea* of a Horse, Cow, or Dog, you can never frame any Phansie or Imagination of them ; so likewise if your Common Sense is so far abolished, that you cannot conceive or make a distinction of the impressions those Animals made upon the Filaments of your Brain, it is not possible for you to remember them. Probably then this Inference may be made, that the greater Memory a Man hath, the greater must be his Phansie, Knowledge, Wit and Judgment ; which is otherwise observed, in regard that very oft the greatest Memories are not attended with the greatest Wit and Judgment. That they are attended with the greater Knowledge is most certain ; for a Man that remembers a great many Objects, or Subjects, must know so many more than another, who doth not remember so many ; though for what concerns his Phansie, Wit
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and Judgment, they may be quicker, or nimbler, and more agreeable to right Reason in one of a weaker Memory, but no farther, and of no more Subjects than the number he remembers.

It may be objected against what I asserted before, that Common Sense, Memory and Imagination; are only three several Acts of one Faculty; that Mad-men oft retaining their Common Sense and Memory intire, and having only their Imagination depraved, is an evidence they must be three distinct Faculties, whereof one being depraved, doth perform depraved Acts, and the others that are intire, do perform Acts as they ought; wherefore since a sound Act, and one that's depraved, cannot proceed at the same time from one and the same Faculty, it follows, they must be three distinct Faculties. I do Answer to this, that the Common Sense and Memory in a Mad-man are depraved, to the same proportion his Imagination is depraved; for to him a Horse may appear to be a Cow, or he may and doth remember things to be otherwise than they were first represented to him. The same Animal Spirits, the same Nerves, and medullar filaments of the Brain, do all act in the exercise of the internal Senses: And that perceiving of sensible Objects (which is the act of Common Sense) the retaining them, (being the Act of Memory) and the composing them variously together (which is the Act of Phantasie) should be other than

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Acts of the same Sensitive or Cognoscitive Faculty in Beasts, or of the Rational Faculty in Men, I can in no wise apprehend.

In regard the Memory of Beasts) though some of them have a Brain of greater dimensions than a Man) is so little capable of retaining many sensible Impressions, which are certainly material; and whereas a Man is capable of retaining of innumerable and infinite impressions of Words, Languages, and all things sensible and intelligible, it cannot be conceived, but that the Rational Faculty, and consequently the Soul must be immaterial; for should you suppose, as commonly its taught, that the Memory is only an Impression made upon, and retained either by the soft substance of the Brain, or upon its Animal Spirits gathered into a soft Cloud; were the Brain of as large an extent as a Church, and could harbour as many Spirits, that nor these could be capacious enough to retain a tenth part of things, which a Man is capable of remembring. So that I say, the Rational Faculty must be immaterial, that is, cannot be performed by a material Organ, as the Brain, and its material Animal Spirits; and therefore its impossible for any Man to conceive the manner of operation of the Rational Faculty, as long as the Soul continues confin'd and immersed in a material or corporeal substance: And were the Soul of Man material, as some do believe for want of true Reason, it could be capable of discerning and remembring no more Objects, than the Soul

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of a Beast, the Brain of some Beasts being as organically and aptly framed, as the Brain of a Man, and in some the Animal Spirits much more fine and subtil.

From this Discourse I do infer, that the Cognoscitive internal Senses, (which are subservient to the Rational Faculty, comprehending a Rational or intellective Common Sense, Memory, and Imagination) in a *Mania* are only affected; for the Intellective being immaterial, can in no wise be subject to be affected by any thing that is material; neither could any material Remedy have a power to act upon an immaterial Disease of a Man, as Madness must be termed, were the Intellective part touched, more than upon the immaterial Madness of a Devil.

This premis'd, I am of opinion, that the Animal Spirits in the Brain being irregularly and violently mov'd, is the cause of a *Mania*, by putting those sensible Impressions, that are made upon the lateral minute Filaments of the Brain, into a disorder, and changing their Positions, which occasions the Common Sense, Memory and Phanſie to be so depraved: That the Fury and Heat, which Maniacs are so frequently impell'd into, are occasion'd by the continued, quick, and impetuous Motion of the Animal Spirits, which thereby are grinded into very sharp cutting, piercing Points, that disunite the lateral Filaments, stimulate, prick, cut, and pierce those Filaments of the medullar part of the Brain, and of the Nerves, and by the
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foreſaid rapid Motions the whole ſenſitive Machine is put into a Flame: That their continual wakefulneſs proceeds from the abundance of Animal Spirits (the cauſe of which ſhall be explained below) the Brain of Maniacs is furniſh'd with, the waſt of Spirits, their paucity, Feebleneſs and ſlow motion, giving commonly occaſion for Sleep. That they are in no wiſe ſubject to Fevers, taking Cold, Obſtructions of any of their Bowels, or ſcarce any other Diſtemper, or any preratural Symptom, except over-wakefulneſs, (*vigiliæ immoderatæ*) is to be imputed to the Rapid Motion of their Animal Spirits, attenuating their Blood, promoting of its circulation, rendering the Body pervious, and free from all Obſtructions of the internal and external Pores; their Blood being more ſalin and dry, than ſulphurous, is not ſo much expoſed to a febril Putrefaction: Though it muſt be obſerv'd, that very oft before Maniacs fall into their Diſtemper, there is a great Calm and ſlowneſs of Motion in the Animal Spirits, which occaſioneth a very ſlow motion in the Humours about the Bowels, and very oft a Stagnation, that diſpoſes them to a particular ſort of putrefaction, whence gradually proceeding ſome putrid, ſalin, ſharp, acuated or pointed Particles, that oppreſs the Animal Spirits, dull their Motion, and cauſe ſuch a diſorder in their Blood, that is productive of ſuch Symptoms, which commonly Melancholic Hypochondriacs are troubled with

as Sighing, heavy, sorrowful and desponding Thoughts, palpitations of the Heart, Frights, Fears, Sloathfulness in stirring, Languidness, &c. These forementioned putrid, salin Particles, as they arise, and separate gradually, and are afterwards mix'd with the whole Mass of Blood, increase the prenumerated Symptoms, until at length great Crowds issuing thence, do so violently move, stimulate, impel, and hurry the Animal Spirits into a Tempest and Fury, whence soon after those other Manical Symptoms do follow.

A *Mania* or Madnefs, though it be only a Symptom, and the chief and most urgent of the others, that are associated with it, is as all other chief Symptoms, commonly called a Disease, by a *Metonymia Adjuncti pro subjecto*. By the same tropical manner of speaking a Fever, or rather Fervor, is called a Disease, from the burning heat that doth oft accompany it, though it be but a chief Symptom. This I thought fit to observe, to prevent your judging it a mistake in me, in calling a *Mania*, and many, if not all chief Symptoms a Disease, which is a very common way of speaking among most Physicians.

That in Maniacs the functions of the Bowels, and other parts are performed with greater vigour than in others, appears by their digesting almost any thing that's edible, by their copious Excretions by Stool, Urine, and Sweat, by their wonderful and almost incredible strength of their Limbs, so as sometimes the strength of a Madman, shall exceed the

the united force of four or five Men, that have their Senses intire. Their Hearing, Seeing, and other Senses are much more exquisite (though depraved) than in others, in regard Madmen will hear the least noise, and see the least Object, beyond what they could do when they were *Compotes*. The Cause and Reason of all which is the abundance of Animal Spirits, that are contained and engendred in Madmen, insomuch that it may be presumed, the greatest part of their Blood is spiritualiz'd, or converted into Animal Spirits; for without supposing this vast plethory of Spirits, it's impossible they should be always, Night and Day, using their Tongues and Limbs in so furious and violent a manner, without any long intermissions of Rest or Sleep. This Plethory ariseth from the almost perpetual, violent, quick and nimble motion of the Animal Spirits, piercing, grinding, and subtilizing the greatest part of the Blood into Spirits similar to themselves.

If a Madman, after he hath continued in a long raving Fury, falls into a long intermission of Silence, hardly to be provoked out of it, that must be adscribed to the great expence and wast of Animal Spirits, by his long fit of Fury, which he is forced to repair, by giving the remainder of his Spirits time to breed more.

His reciprocal seasons of Madness, intermix'd with intervals of Rational Discourse, in some for a longer time, in others shorter, may be attributed to the variety of motion

in his Spirits, which ſometimes moving regularly and naturally, are the occaſion of the latter, to wit his lucid Interval, whereas he is impell'd into the former by Fits, as frequent, as there is a new ſallying out of a crowd of the forementioned putrid ſalin Particles, mixing with the Blood, and upon its arrival to the Brain, mixing with the Spirits.

I have been obliged to make an expatiation in the Theory of the external Senſes, to the end I might more eaſily explain the manner of natural Operation of the Internal, thereby in ſome ſort to apprehend the manner of their preternatural Operation in a *Mania*; which I did the rather, that I might give my ſelf the occaſion of examining the practical part, relating to the curing of Diſeaſes of the Eyes and Ears, as well as of the Brain. If I have not been ſo ſucceſſful in theſe moſt difficult and abſtruſe Matters, as I could wiſh, or as others of a much better capacity might have been, I hope I may be excuſed for my attempt, were it only for propoſing the Subjects, and giving others an opportunity to exerciſe their Induſtry and great Abilities. However, I ſhall preſume to give you an Account of what uſe I make of the ſaid Theory.

Fiſt, In relation to the Eyes, the *leſion* of the Sight is either cauſed by the fault of the Optic Nerves, and their expanded Filaments, the decay, waſte, and vitious conſtitution of the Animal Spirits, or the vitious diſpoſition of the Tunics of the Eye, but eſpecially of the Horny-coat, or by the fault of the Humours

mours, I mean the aqueous, vitreous, and crystalline, whose Office I did only suppose is, to support and keep the Tunics justly distended, and by Reflection, to return the visible Impression to the *Horny-coat*.

I do only pretend here to take notice of some defects of the *Horny-coat*, the *Humor aqueus*, and Optic Nerves; for should I here insert, what may be practically observed, concerning all or most Diseases that are incident to the Eyes, and their several Coats, Humours, Muscles, and Optic Nerves, a large Volume would be scarce capacious enough to contain it.

The forementioned Tunic being of too thin a texture (from the tenuity of the Nervous Expansion) and the extreme subtilty of the Optick Spirits, and the tenuity of the Aqueous Humour making too little resistance to the luminous Particles, coming from a great distance; the said luminous Particles being too much thinned, and losing some part of their Lustre, are thereby not congregated enough, by reason of the rarity of the foresaid Tunic and Humour, and consequently have too little force to act upon them; whereas in a Tunic, that is of a more compact texture, and consisting of more numerous, though much streighter Pores, the luminous Rays are much easier gather'd together, and consequently may operate from a greater distance. This laxity of the said Tunic and Humour is two-fold; one natural, and the other adventitious, by reason of some Disease, as a Fever, Con-

sumption, &c. The former is in no ways to be medled with. The latter either ceaseth upon the removal of the Disease, that caused it, or if it should continue, may be remedied by washing the Eyes daily with water, where in a very little Salt-Petre, or rather Sal Prunellæ hath been dissolv'd; or you may two or three times in a Day drop into the Eye, a drop or two of this Solution, viz. two Grains of white Vitriol dissolv'd in two Ounces of some clear Well-water; wherefore you are to take notice, that most common Eye-waters, that are cried up for Sovereign Remedies against all, or most Diseases of the Eyes, are strictly to be avoided in all short Sights, whereby they would be rendred much worse. Such sort of Waters are usually distilled from Fennil, Celandine, Eye-bright, Rue, Vervain, Male pimpernel, Hogs-Fennil, &c. Besides, in short Sights the distention of the *Horny Tunic* is too weak and slack, by reason of the loose texture, and thinness of the said Tunic and Aqueous Humour, upon which the feeble and almost spent Rays, that arrive from a great distance, can scarce act or exercise such an Impression or Motion, as is necessary for Sight. On the other hand, where the said Tunic is of a good Texture, and fully distended, Objects are perceptible from a much remoter distance: But where the forementioned Tunic is grown too thick, and consequently less diaphanous, and less porous, that Sight is neither good at a distance, nor near, as its oft observ'd in old Folks.

Folks. Moreover, in those the *Humor Aquosus* is very much thickned, so as to deny a full and free passage to the luminous Beams; the said Humour is also become less turgid, and of small compass, whereby the *Horny Tunic* becomes less distended, and a little flatted, so that the visible Object must necessarily act very feeble upon it, the Rays not being sufficiently congregated, through its defect in convexity. Add hereunto, that in them the Optic Spirits are grown few, gross, and fumes, which renders the perception of the Object dim, and cloudy.

To preserve the Eye-sight, is to retard, and hinder it from becoming such, as it is in old People; that is, 1. By rendering the Animal Spirits light, subtil, clear, and more copious. 2. By attenuating the *Horny Tunic*, and the watery Humour. 3. By avoiding straining of the Sight, by exercising it long and often upon very small, shining, dispersing, or very distant and remote Objects.

The first of these means consists in keeping the Body clean of gross Excrements, which gave so frequent occasion to the Antient Physicians, to invent Pills peculiarly appropriated to the Sight, and distinguish'd with Names referring to it; As *Pil. Lucis majores* and *minores*; and others, as *Pil. Aureæ, sine quibus, Cochiae majores* and *minores, &c.* I cannot think, any of these Compositions hath any more regard to the Eyes, than to the Toes; but because in the mass of *Pil. Lucis maj.* and *min.* is contained a very small proportion of

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Eye-bright, mix'd with Aloes, and *Colocynthis*, together with a great many contrary Ingredients, which serve for nothing else, but to clog the Medicine, and all this is to be made into a Paste, with Juice of Fennil, they thought they had reason enough, to expect from them and the others forementioned, all the Virtues, whereby to preserve Sight, and cure the Eyes of all Diseases past, present, and to come; but what is a greater wonder to me is, that still there are many Physicians, that allow a very great respect to the said Pills in Diseases of the Eyes, whereas most certainly a good *Extractum Rudij*, or *Catholicon* well composed, and made up, will serve abundantly better, cheaper, pleasanter, and more effectually in any Disease, that may require strong Purging; so that were all those Colocynth and Scammoniack Compositions, which modern Dispensatories are cram'm'd with, thrown out, it would be much more profitable to the Patient, and less troublefom to the Apothecary.

What I mean by keeping the Body clean, is to take now and then those Pills, which are recommended in the foregoing part of this Treatise, without adding the least grain of *Eye-bright* to them. Besides this, its necessary to abstain from all gross, windy, steaming Meats, Salt-fish and Flesh, fowr Sauces, strong Drinks, Feeding chiefly upon Meat of a good Juice, and that yields but little Excrement, and using Drink that's clear, well digested, and moderate in strength. Nothing hitherto

hitherto hath been observed a greater Enemy to Sight, than Wormwood, which being used in Drink, or otherwise, hath been the occasion of dulling the Sight in some, and of Blindness in others; yet notwithstanding *Dioscorides* commends it for a sharpner of the Sight, and therefore little credit ought to be given to these old Authors in many of their Characters. Onions, Leeks and Garlick, come not much short of that Plant. All raw Sallads are experienc'd hurtful to the Sight, by contributing matter for Crudities, and being windy. Weeping in Women, a long sorrowful and melancholic Disposition, and too much gravity do lessen, condense, and blunt the Optic Spirits, which ought to be ferene and agil. Living in a dark House in a foggy Air, work effects little different from the former. Too much Sun-shine reflected from a sandy Ground, hath been the cause of Blindness in many that live in *Spain*. Very hot Countries contain more Blind, than those that are temperate, or cold, tho' in the latter, they are not commonly quick or far Sighted, excess of Cold condensing the Optick Spirits too much. As Weeping and great Debauchees do oft furnish their Eyes with an outward glazie Coat, so they do not seldom according to the common Phrase, drink their Eyes out. It may probably be said, *Visum debilitant Balnea, Bacchus, Amor*; as well as *Corpora*: And on the other hand, whatever may be said to preserve the Body in Health, doth preserve the Sight. Smoak
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and Dust are none of the least Enemies to the Eyes.

The attenuating the *Horny Coat* and the *Humor Aquens*, (which at the same time attenuates the Optick Spirits, depurates and renders the foresaid Tunic and Humour clear and diaphanous) is commonly attempted by inward and outward Medicines, that have a power to discuss Winds, and move Urine, proceeding from their subtil Particles, that are supposed to be very attenuating, and consequently diuretic, and discussive. These Medicines are usually called *Oxydercica*, that is, sharpeners of the Sight, from *ὄξύ*, *acutum* & *ἀσπένδον*, *video*. Such are accounted all the greater and lesser hot Seeds, but chiefly *Fennil* and *Duncus*, *Elicampane*, *Orange-peel*, *Masterwort*, *Calamus aromaticus*, *Virginian Snake-weed*, *Cubebs*, *Galangal*, *Rad. cyperi longi*, & *rotundi*, *Paradise Grains*, *Cardamum*, *Zedoary*, *sem. fileris montani*. *sem. seseli Massiliensis*, *Nutmegs*, and most sort of *Spices*. On the other hand, all *Antiscorbutics*, especially *Mustard* and *Garden-Cresses*, are accounted pernicious to the Eyes; and *Ginger*, *Pepper*, and *Persly*, as discutient as they are, offend the Sight, and so do most *Sowrs*. These following are esteemed specific *Oxydercics*, viz. *Eyebright*, the greater *Celandine*, *Vervain*, *Fumitory*, *Valerian*, *Avens*, *Rue* and *Clary*, than which last, nothing can be found a greater Darkner of the Sight, and more offensive to the Eyes; for being put into Wort to ferment with it, renders the Drink the most inebriating,

ebriating, and discomposing all the Senses, beyond any other vegetable, excepting Darnel. And yet being outwardly applied, is very excellling in thinning the Coats of the Eyes, and watery Humours, and very discutient in clearing the Sight from dimness or cloudiness. As great an Author as *Platerus* is, he recommends *Radishes* and *Mustard* for specific Sight sharpeners, than which common experience doth most certainly convince us, nothing can be a greater Enemy to the Sight: which informs us, that we are not to take things upon trust so slightly, as most Physicians and others are apt to do, without comparing them with the Rules of Experience and Reason.

Those forementioned Aromatics, Seeds and Roots, are discutients of Wind by their subtil Particles, which they perform by attenuating of gross Humours into Bubbles, which breaking, emit those Winds, or crude mix'd Aery Spirits, that afterwards are sometimes avoided upwards or downwards, or are impell'd into the Vessels; these mounting upwards, do for a time much disturb the Sight, until they are either discussed by the Spirits, that are in the Eyes, and assisted therein by a further continuation of the use of the said attenuating Aromatics, and Seeds. Hence it is, that very oft those attenuating Oxydercics do render the Sight much worse, and sometimes in Phlegmatic Constitutions usher in Blindness at first, though othertimes also the continuation

tion of them may discuss the Winds they first rais'd; wherefore a great deal of Caution ought to be used in the Application of them: So that it appears plainly, that the same Oxyderics may remedy the Sight, and keep off Blindness in some; though in others they most certainly cause Dimness of Sight, and Blindness.

Diureticks, by carrying off the Salts of the Blood by Urine, (they by drying up the Aqueous Humour, and corrugating or condensing the *Horny Coat*, thicken and lessen the former, and harden the latter in Old People, whose Eyes therefore do appear thick, dull, flat, slow in Motion, &c.) have been experimentally found very advantageous, not only in preserving and meliorating of the Sight, but in preventing and removing many Diseases incident to the Eyes. Among those *Millepedes* or Sowes moderately used either in Ale, or otherwise, are universally, and by common Experience, preferr'd beyond all others; for being copiously furnish'd with very subtile penetrating light Spirits, they do not only carry off Salts by Urine, but attenuate and discuss what is gross in the Watery Humour, and all the Tunicks, and subtilize the Animal Spirits; which Qualities seem to render them specifick to the Eyes.

Some do use *Ground-Ivy* in their ordinary Drink, to preserve their Sight, to no great purpose: But in *Valerian* and *Vervain* (a quantity of one or both being added to the

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Wort before, or while it is working) many do affirm to have experienc'd a great Power, in preserving their Sight, and removing Dimness. To mend the Taste of such sort of Ale, a moderate Proportion of *Elicampane-Root*, *Orange-Peel*, or a few *Daucus-Seeds* might be added. *Bean-Stalk* Ashes, to the quantity of five or six Ounces, if they are clean, put to a Firkin of Small Ale after the working, jumbling them well together, and allowing them four or five Days to settle to the bottom, did they not blunt the Taste of the Drink so much, would prove more powerful, than any of those Vegetables.

As for the Externals, I should be loth to advise any Person to Compound Eye-Waters, to preserve his Sight: The Washing the Eyes daily with clear Spring or Rain-Water is sufficient. Water that hath stood long in a Leaden Cistern, is accounted hurtful, there rising a very sharp offensive Steem in Length of Time from the Lead, that mixeth with the Water.

Those whose Eyes are weak from their Birth, ought to avoid tampering with any sort of *Oxydericks*, Internal, or External, their Weakness of Sight depending much upon a natural Laxity of the Optick Nerves, and Tunicks; their Humours of the Eye being also thin, and their Optick Spirits loose, and not compact; all which may be easily render'd worse by uncertain Remedies, and never or seldom better, though their Growth in Age, Change of Climate, or Diet, may
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considerably contribute towards the Melioration of their Sight. A Weakness of the Eyes, that Sickness might have left, doth oft go off with the Weakness of other Parts, by the Recovery of Strength of the Brain and Bowels. But if that Weakness should singly remain, then besides due Evacuations, general and particular, Recourse may be had to proper Internal and External *Oxymercicks*, which ought to be chosen with the strictest Caution.

Among Diseases of the Eyes, I do account a *Suffusion*, *Cataract*, and *Gutta Serena* the most dangerous; and an *Ophthalmia*, or Inflammation, the most painful, and oft an Antecedent Cause of the others.

A *Suffusion*, or *Hypochyma*, seems to me to proceed either from some subtle Winds, or Windy Spirits, sallying out of the Arteries, or Pores of the Nerves, and breaking into the Watery Humour of the Eye, there causing very minute Bubbles of various Figures, which being actuated or moved by the Luminous Rays, (for when a Man's Eyes are shut, whereby the said Luminous Rays are excluded, he is not in the least sensible of them,) do produce those Appearances of little Boulds, Flies, and other small Shapes, floating or flying to and fro before the Eyes.

There are commonly observ'd two kinds of those Suffusions: The one arising from Crudities of the Stomach, or Flatuous Hypochondriack Humours of the Bowels, is not durable,

durable, though oft returning by Intervals. Those little Figures, that do deceitfully impose upon the Sight, moving much quicker, than in the other kind, and meeting together, join into a Cloudiness, that quickly vanishes, by reason that those Windy Spirits, which issue through the Pores of the Arteries, being of a Vaporous or Watery Composition, are much lighter, move nimbler, and are much easier discuss'd, than those Windy Spirits, that are pressed out of the Pores of the Nerves, which being of a more saline, tough, heavy, and compact Mixture, consequently durable, and constantly abiding, (because not easily discuss'd,) make Representations of larger Figures, and are moved much more slowly; and consisting of clammy or viscous most minute Particles, are very apt to unite; whence it happens, that their Representations are disposed to grow daily bigger and bigger. These Viscous Windy Spirits are subject to be precipitated, or impelled to the Pupil, or *Foramen Uvae*, by the constant passing of the Luminous Particles in Beams or Rays towards the said *Foramen Uvae*, where they are concentrated, or gather'd together in the Figure of a Cone, the said *Foramen* forming the narrow End of the Cone, as the *Cornea Tunica* doth the broad. So that it is the said Viscid Nervous Winds, impell'd by the continual passing of the Luminous Rays to the *Foramen Uvae* into an united Body, which at length doth form that Preter-natural Skin, called a

N Cataract,

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Cataract, being a discernable Cause of Blindness, in Contradiction to a *Gutta Serena*, the Cause whereof is not externally discernable, but commonly ascrib'd to gross Humours, obstructing the Hollow of the Optick Nerves, and stopping the Influx of the Optick Spirits. I cannot but wonder, whence those gross thick Humours should be sent, or how convey'd; not from the Medullar part of the Brain, where Arteries or Veins are scarcely discoverable, and whose very Compact Substance is no more susceptible of of any thing that is gross, than the Beginning of the Optick Nerves. Besides, such sort of slimy gross Humours might easily, in the beginning of a *Gutta Serena* be melted down, and carry'd off by the common Head-Purgers, which are generally very strong and churlish; as *Pil. Cochiae maj. and min. Pil. Arabic. e duobus. Elect. Indum. maj. & min.* and all their compounded *Hieras*. So that to me the *Ætiology* of this, and almost of all the rest of the Diseases of the Eyes, seems *gravis dictum*.

It is more apparent to me, that the most frequent cause of a *Gutta Serena* is the nervous *Lympha*, (which is the Vehicle, or rather is the *Materia* constituting the grosser Particles, which united with the subtiler and most subtil Particles, separated out of the best and finest parts of the Arterial Blood, do compose the Animal Spirits) being grown too gross, thick and viscous in the Optick Nerves, stagnate there, and makes a Damm, thereby hinders

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ing and putting a stop to the influx of the Animal Spirits, from the Brain to the Eye, which ought not to be termed Optick Spirits before they arrive thither. By this supposition, a *Gutta serena* seems to be a Palsie (*Paralysis*) of the Optic Nerve; all other Palsies, whether universal or particular, being engender'd by no other cause, than by the stagnation of the Nervous *Lympha*, (being render'd gross and viscous) in the beginning of the Nerves in the former, and in particular Nerves in the latter. After a proper Purge or two to clear the Passages, and make room in the Vessels, how little advantage can be expected from frequent Cathartics, though violent, or any other Remedies vulgarly in use against a *Gutta serena*, or any other Palsie, may be easily understood from the forementioned *Hypothesis*; for should you purge *ad infinitum*, you can never pretend to draw off that coagulated Nervous *Lympha*, but rather by drying all the Humors in carrying off the moiſter and thinner part, you must necessarily render it worse, which by long continuance doth turn into a hard substance, much tougher than the Nerve it self, or the toughest Leather, and consequently must be incurable. And much less advantage can be hoped from any of the celebrated Eye-Waters, some whereof are pretended to have cured those that have been blind 20 years, and go under the Name of some Queen's or Lady's Eye-water, all which is no more to be credited, than the Achievements of a Knight Errant; for you may as reasonably

pretend to break the Stone in the Bladder by applying *Millepedes* to the Soals of the Feet, as to dissolve a *Gutta serena* by an Eye-water, if you consider the great distance from the *Horny Tunic* (to which they are to be apply'd) to the Optic Nerve, the several Coats and Humors of the Eye, the extream tenderness and sensibility of the said Coats, and the necessity of an extraordinary piercing Remedy, which sure I am, is not greatly to be found in those Aromatics, Seeds, and Oxydercic Leaves, of which most Eye-waters consist, and are very repugnant to the qualities of Aloes, Honey, *Turbia*, white Vitriol, Sugar-candy, Sugar of Lead, and other Materials, that are oft ridiculously enough added to them, I do know, that sometimes, once possibly in two or three Ages, a *Gutta serena* hath been removed by an accidental Salivation, othertimes by a sudden violent Fever, that by rarefying all the Humours, and putting the Animal Spirits into a violent motion, the viscous Damm hath been pierced through, and violently expelled. But these are means, that if imitated, do seldom or never attain the success hoped for.

Besides the cause forementioned, Convulsions, and Tumors of the Muscles of the Eye near the heads of them, have caused a *Gutta Serena*; the former, by contorting the Optic Nerves, and altering the Figures and Positions of their Filaments, which I do remember occasioned a *Gutta Serena* in the Lord G's Lady, when living in the *Pall-Mall*, upon the taking of *Vinum Benedictum* (*Maledictum* sometimes)

times) prescribed by her Physician, at the request of the Patient I presume, and probably ill prepared, and overdosed by the Apothecary, contrary to the directions of the Doctor : The latter perform this unfortunate effect, by compressing the Optic Nerve, which sometimes is removed, but not always.

A *Gutta Serena* may sometimes be removed with great difficulty in the beginning, *præmissis universalibus*, by potent, sulphurous, and oleous internal Medicines, which under that shape, may preserve a great part of their Virtue until their arrival to the Brain and Nerves, and possibly some of them may externally be let in by the Vessels of the Head, but then those Internals must be frequently exhibited in large Doses, and continued for a long time, even to the brink of a Fever, or some other contrary Distemper ; and this is the only Method to cure all other sorts of Palsies, which I have followed more than once.

A *Cataract* is best cured in the beginning, and whilst it continues to be a *Suffusion*. Internal means are as necessary as external. Sugar of Lead, being well prepared by digesting Spirit of Wine with it, and abstracting it afterwards by distillation, and dissolved in a convenient Vehicle, is not only an excellent Topic in this Disease, but in many others of the Eyes, especially in an *Ophthalmia*, *taraxis*, and *Chymosis*, Ulcers of the Tunics, and *Epiphora*, &c. for there is a Spirit in Lead, being well corrected and managed, is the most discutient and penetrating of any
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in respect to the Eyes; besides, the Salt, contains a great Sweetness, and is indued with many singular Virtues.

An *Ophthalmia* I do suppose to be occasion'd by Evaporations of the *Lympha*, contained in the capillar *Nervuli*, disseminated in the *Tunica conjunctiva*, being grown very sharp and corroding, (as is formerly mentioned) which Evaporations being condensed into small drops or gleets, and meeting with other Juices, cause an effervescency and coagulation, to which pain *supervening* invites other Humours, that together produce such a sort of Inflammation. I have oft observ'd, that the application of cold Medicines (as whites of Eggs, Conserve of Roses, and other Restringtons) hath so little abated the Distemper, that it render'd it much worse. This Disease is sometimes painful to extremity, and very oft of a long continuance, insomuch that I have known it protracted to nine or ten Weeks, and doth not seldom leave other mischievous Diseases behind it.

What Concerns the Practical Part of a Mania or Madness.

Bleeding frequently repeated in the Arm and Foot, also at the Hæmorrhoids, is commonly advised as an universal and necessary premis, to answer the Indication of the Plethory of Humours and Spirits, that most Madmen are subject unto, occasion'd by their greedy and ravenous Appetite; notwithstanding if used more than necessary, it doth certainly cause a moaping, and still leave a *desipientia* and depravation of their Internal Senses, so that there must be a great caution used in this particular. I do very well know, that by bleeding subtracting the matter, whereout that abundance of rapid and furious Animal Spirits is engendred, the disorder of the Brain is oft lessened, but soon returns again upon the replenishing of the Body. By abating of the Blood, the Spirits
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are diminish'd; and consequently the heat of the Brain, which the violent motion of the Spirits occasion, must be in some measure moderated. However, I can look upon Bleeding no other wise, than a concurring remedy, or a remedy *per accidens*, and doth not directly answer the Indication of clearing the Body, and particularly the Brain, of those putrid, acute, pungent, saline Particles, nor doth it make that change upon the Bowels, so as to prevent the engendring the same again, which is the chief Indication in the cure of a *Mania*.

Strong Purging by *Senna*, *Turbith*, and *Scammony*, and particularly by black *Hellebor*, is what the pretended Masters of Mad-houses do most depend upon, as some Physicians do upon *Antimony*, in the form of a *Regulus*, *Glass*, or a *Crocus Metallorum*, whereby they endeavour not only to throw off the *Saburra* or heap of gross excrementitious Humors, but by stimulating and shaking of the Nerves thro' the Vomits and stools it moves, they do expect these slimy putrid Particles should be thrown off from the Brain and Nerves: And in this some have been successful, tho' but in few. The inconvenience lyeth here, if by too frequent strong Purgations, you do drain the gross saline Humours of their *Serum*, which doth both render them fluid, and dilute their Acrimony, you do excessively sharpen those Humours, encrease the Obstructions, and by violently fermenting of them (which strong Purgatives most certainly do) force them to steam up those putrid pungent Particles, whereby *Maniacs* are render'd much worse; wherefore its more advisable, after a smart Purge or two, to depend upon moderate Purgatives, as *Pil. Tartar. Querc. Pil. Stomachi cum gum. Diasema*, &c.

After all, Bleedings and Purgatives being only a universal necessary premisses, the chief Indication is to rectify the Bowels, so as to prevent the engendring those gross saline Humours, and to clear
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the Brain of the foreſaid pungent Particles, whereby the ſeveral parts of the Brain may be reduc'd to their natural figures and poſitions, and the exerciſe of their Function. I do not perceive, that practical Authors do recommend any Remedies of that kind with any confidence, neither do I find many Compoſitions deſcrib'd in Diſpenſatories for that purpoſe, and thoſe that are, differ little from ſuch as commonly are adviſed againſt Hypochondriac Melancholy, and are to be uſed for a long continuance, the tediousneſs of which Courſe doth not only tire the Phyſician, but the Friends of the Patients alſo, who therefore commonly commit them to the care of ſuch, as make it their buſineſs, and are willing to be watchful over them, and keep them quiet and in a low moderate Diet, intermixing gentle Purgings, and Bleedings at Intervals, whereby ſome are recover'd. Now and then when they are very furious, and overwakeful, they give 'em Opiates. Some uſe Cupping to the Shoulders, with and without ſcarification; others uſe opiated Ointments to their Temples, and bathing of their Heads being ſhaved, with Decoction of Cephalic Herbs, Flowers, and Seeds, &c.

I have had the fortune to cure ſeveral, in a little more or leſs than ſix Weeks, by Bleeding of 'em twice or thrice, and Purging them gently with Minerals. In the Intervals I gave them Antihypochondriac Tinctures, compoſed chiefly of Minerals.

Maniacs, whoſe Figures and Poſitions of the Filaments of the Brain and Nerves have been much changed, and diſplaced by a long continuance of their Furies, are incurable. I might add a great many Obſervations to this Head, but the ſhortneſs of my time obliges me to come to a

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